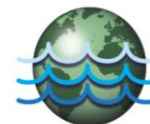


# P.W. GROSSER CONSULTING



February 11, 2015

Ellis Koch  
RXRGIP  
1750 New Highway  
Farmingdale, NY 11747

**RE: Leachable Arsenic and Lead Sampling Report – Garvies' Point Redevelopment Project**

Dear Mr. Koch:

P.W. Grosser Consulting, Inc. (PWGC) has prepared this letter to detail the findings of the arsenic and lead investigation performed on the Former Li Tungsten and Captain's Cove Sites (the Site) at the request of the New York State Department of Environmental Conservation (NYSDEC) to determine the potential fate and transportation of these compounds to help guide Site Specific Soil Cleanup Objectives (SCOs). The investigation was performed in accordance with the January 6, 2015, Leachable Arsenic and Lead Sampling Work Plan. The purpose of the investigation was to further investigate and confirm the presence of arsenic and lead hotspots and determine if arsenic could produce a leachate that exceeds the NYSDEC Groundwater Quality Standard (GQS) and if lead could produce a leachate that exceeds the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) Hazardous Waste Classification.

## Background

The 2014 Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation identified a total of 39 soil borings where one or more depth intervals exceeded the Site-Wide Cleanup Level (SWCL) of 24 or 400 mg/kg, arsenic and lead, respectively. The soil borings with the highest concentrations of arsenic and/or lead are listed below:

- Lead
  - LT-C-024 (2-4') 4,480 mg/kg
  - CC-C-023 (6-8') 6,030 mg/kg
  - CC-C-029 (8-10') 1,180 mg/kg
  - CC-C-030 (8-10') 983 mg/kg
- Arsenic
  - CC-C-019 (0-2') 1,850 mg/kg
  - CC-C-022 (0-2') 379 mg/kg
  - CC-C-028 (0-2') 253 mg/kg
  - LT-C-003 (0-2') 107 mg/kg
  - LT-C-024 (2-4') 581 mg/kg
  - LT-C-026 (6-8') 63.2 mg/kg
  - LT-C-035 (4-6') 58.6 mg/kg
  - LT-C-056 (2-4') 105 mg/kg
  - LT-G-019 (2-4') 181 mg/kg

The above list was included in the work plan and were the locations targeted for this investigation. Please note that LT-C-047 had high concentrations but has been remediated with the removal of underground storage tanks at the Site. In addition, LT-R-002 and LT-R-003 had high concentrations of arsenic in the soil but groundwater samples collected from these borings in accordance with the procedures established in

the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation Work Plan showed dissolved arsenic concentrations below NYSDEC GQS which indicates that arsenic does not appear to be leaching out of the soil into the groundwater. Therefore these were not included on the list and the locations were not selected for further evaluation.

### **Field Investigation**

The investigation occurred between January 7 and 15, 2015. The Leachable Arsenic and Lead Sampling Work Plan originally proposed for soil borings to be installed immediately adjacent to the hot spot locations. However, due to the cold temperatures and the frozen ground, a direct push drill rig could not be utilized and an excavator was supplemented to sample and evaluate soil quality at these locations. Also, PWGC believes that this method would allow for screening and contact with more material which would increase the chance to come in contact with more impacted material. The procedures followed the Test Pit Protocol, Section 4.4.1 of the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation Work Plan with the screening modifications detailed in the Leachable Arsenic and Lead Sampling Work Plan.

### **Test Pit Protocol**

Prior to the installation of each test pit, 10-mil polyethylene sheeting, sufficiently large enough to hold the anticipated excavated soil was laid on the ground in the area where the excavated soil was placed. At each location, a track mounted excavator was utilized to perform a test pit. Each test pit was performed in two foot lifts until the previously established arsenic/lead exceedance confirmation depth was reached. This depth varied from two feet to ten feet below grade surface (bgs).

PWGC documented soil types, characteristics, changes in lithology, odors, and wastes (if any) encountered in the test pits. For each lift, a five point composite sample was collected, homogenized and screened with the XRF for arsenic and lead detections. This characterization and screening protocol was utilized for both the soil boring and test pit investigative approaches during the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation. The full two-foot interval from soil borings was composited prior to screening with the XRF during the previous investigation. Characterization, photos, and screening results were recorded in a test pit log (**Appendix A**). Samples submitted for laboratory analysis were collected from the intervals with the highest XRF field readings.

### **Lead Investigation Findings**

**Table 1** shows the screening results and total concentrations for lead from the selected locations from the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation. Additionally, the table shows the screening results obtained during this investigation as well as reporting the total values which were used to determine which samples should be run for TCLP analysis.

Screening results from the test pits did not identify the presence of lead above 400 mg/kg in the six locations (CC-C-019, CC-C-022, CC-C-023, CC-C-029, CC-C-030, & LT-C-024) initially selected for evaluation at the same depth interval, and even from the location that had significant lead concentrations above 450 mg/kg in the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation. Screening results ranged from 56 to 336 mg/kg.

As shown on **Table 1**, total lead analytical results from this investigation ranged from 7.2 mg/kg to 473 mg/kg. The highest concentration (473 mg/kg) was detected in CC-C-019 (0-2'). This sample was not originally identified for lead analysis but was selected due to elevated XRF screening results. The three highest lead detections observed during the Pre-Construction Confirmatory/Insurance Data Gap Subsurface

Investigation (1,180 mg/kg at CC-C-029 (8-10'), 4,480 mg/kg at LT-C-024 (2-4'), and 6,030 mg/kg at CC-C-023 (6-8')) were significantly lower during this investigation (141 mg/kg at CC-C-029 (8-10'), 7.2 mg/kg at LT-C-024 (2-4'), and 215 mg/kg at CC-C-023 (6-8')).

Based upon the initial results, supplemental sampling was performed between January 14 and 15, 2015 and included installation of a second test pit adjacent to CC-C-023, CC-C-029, CC-C-030, and LT-C-024. In addition, test pits were installed adjacent to LT-G-022 and LT-GI-001 which also had elevated lead detections during the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation.

Screening results from these test pits confirmed the presence of lead above 400 ppm at four of the six locations selected for evaluation. Screening results ranged from 225 to 46,200 mg/kg. Significant discoloration was noted at 10 feet below grade at CC-C-030 and the interval was screened at both 8 feet and 10 feet. Screening levels were significantly different between the 8 foot interval (568 mg/kg) and the 10 foot interval (46,200 mg/kg).

Total lead analytical results from this second round of sampling were initially under-reported by the lab. As two samples bottles were supplied for each location the lab was asked to analyze the second bottle while it investigated the cause of the under-reporting. The correctly reported results for the first bottles analyzed ranged from 93.9 mg/kg to 13,900 mg/kg in the initial analysis, over seven sample locations. Lead concentrations in the re-analyzed samples ranged from 72.3 mg/kg to 19,900 mg/kg over these same locations. The two samples collected from CC-C-030 were detected well above the SWCL value of 400 mg/kg (8,620 mg/kg at 8 feet and 19,900 mg/kg at 10 feet). The other detections were still below the SWCL.

Several test pits were performed in the vicinity of the exceedances identified during the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation, which did not result in seeing a greater occurrence of elevated lead detections. Rather, lower concentrations were observed with the exception of CC-C-030.

Based upon the findings of the investigation, CC-C-030 (8') and CC-C-030 (10') were further analyzed by TCLP. TCLP analytical results were well above the USEPA RCRA Hazardous Waste Characteristic value for lead in the two samples (68.9 mg/L in CC-C-030 (8') and 51.4 mg/L in CC-C-030 (10')).

#### Arsenic Investigation Findings

**Table 2** shows the screening results and total concentrations for arsenic from the selected locations from the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation and this investigation. Additionally, the table shows the screening results obtained during this investigation as well as reporting the total values that were used to determine which samples should be run for SPLP analysis.

Screening results from the test pits confirmed the presence of arsenic above 24 mg/kg at seven (CC-C-019, CC-C-022, CC-C-028, LT-C-003, LT-C-024, LT-C-035, & LT-C-056) of the nine locations selected for evaluation at the same depth interval. Screening results ranged from non-detect to 684 mg/kg. The highest screening result was observed at CC-C-019 (0-2') which had the highest analytical result (1,850 mg/kg) from the Pre-Construction Confirmatory / Insurance Data Gap Subsurface Investigation. The screening results for the other locations were significantly lower.

As shown on **Table 2**, total arsenic analytical results from this investigation ranged from 2.7 mg/kg to 993

mg/kg. The highest concentration was detected in CC-C-019 (0-2') which correlates to the highest screening result and was also the location of the highest arsenic concentration detected during the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation. The next two highest concentrations were detected at LT-C-035 (4-6') at a concentration of 652 mg/kg and at CC-C-022 (0-2') at a concentration of 187 mg/kg. Each of the remaining samples was detected at concentrations below the SWCL of 24 mg/kg.

Based upon the initial results, CC-C-019 (0-2'), CC-C-022 (0-2'), and LT-C-035 (4-6') were further analyzed by SPLP. SPLP arsenic results were well above the NYSDEC GQS value for arsenic (25 µg/L) in two of the three samples which included CC-C-019 (0-2') at 360 µg/L and LT-C-035 (4-6') at 200 µg/L. Total arsenic concentrations for these samples were 652 mg/kg and 993 mg/kg, respectively. CC-C-022 (0-2') with a total arsenic concentration of 187 mg/kg resulted in a SPLP value of 5.9 µg/L, which is well below the NYSDEC groundwater standard of 25 µg/L. Given that this SPLP value is an order of magnitude below the groundwater standard, total arsenic concentration in excess of 187 mg/kg should not result in groundwater impact above NYSDEC groundwater standards.

Based upon the initial results, supplemental sampling was performed between January 14 and 15, 2015 and included installing a second test pit adjacent to CC-C-028 and LT-G-024. In addition, test pits were installed adjacent to LT-G-022 and CC-C-030 that also had elevated arsenic screening results when scanned for the presence of lead previously.

Screening results from these test pits confirmed the presence of arsenic above 24 mg/kg in each of the four locations selected for evaluation. Screening results ranged from 37 to 1,542 mg/kg. The highest concentration was detected at CC-C-030 (10') where discoloration was observed and elevated lead concentrations were detected. Based upon the screening results two samples, CC-C-030 (10') and LT-G-022 (0-2'), were further analyzed for total arsenic.

Total arsenic analytical results from this round of sampling were 51.9 mg/kg at CC-C-030 (10') and 76.6 mg/kg at LT-G-022 (0-2'). The CC-C-030 (10') result of 51.9 mg/kg was noted to have a significant difference from the XRF screening result of 1,542 mg/kg. PWGC requested that sample CC-C-030 (10') be re-analyzed by the lab. The arsenic concentration in the re-analyzed sample was 67.8 mg/kg. Interference of lead in the sample may have biased the XRF screening result high which may explain the low total arsenic concentration in the laboratory result. Based upon these results, SPLP testing was not performed on these samples.

Complete laboratory analytical data reports are attached in **Appendix B**.

#### Data Validation and Data Usability

RXR Glen Isle Partners, LLC retained the services of Laboratory Data Consultants, Inc (LDC), of Carlsbad, California to perform validation of data obtained during the investigation. Full data validation was performed on 100% of the sample delivery groups. All data were deemed acceptable by the data validator, incorporating data qualifiers as appropriate. LDC narratives and the full data validation reports are provided in **Appendix C**.

#### **Conclusions**

The supplemental investigation included the installation of twenty test pits to further evaluate Site-wide arsenic and lead concentrations. Direct push drilling was not feasible and the test pit method allowed for

the evaluation and collection of a more representative sample from a larger area compared to the discrete sampling performed as part of the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation. At each two-foot interval, five grabs were collected and homogenized together prior to screening and sampling. Laboratory analysis was performed on the samples with the highest field XRF readings. Investigations at the site have shown inconsistent correlations between field screening and laboratory results. Non-target compounds and/or elevated target compounds have been shown to skew screening results. Analytical results indicate that elevated arsenic and lead detections are not as extensive as the Pre-Construction Confirmatory/Insurance Data Gap Subsurface Investigation results indicate. A few exceedances previously identified were confirmed but in general, soil quality improved when evaluated over a larger homogenous area.

The evaluation of arsenic through SPLP showed that elevated levels up to 187 mg/kg did not produce a leachate (5.9 µg/L) greater than the NYSDEC GQS. The data supports that a concentration greater than 187 mg/kg will likely not result in groundwater impact in excess of groundwater standards.

Levels of lead having the characteristics of hazardous waste were identified at CC-C-030 where discoloration of soil was noted and elevated screening levels were detected. No other screening or analytical results were elevated to the point where a hazardous waste characterization would be warranted.

FIGURE



**PWGC**

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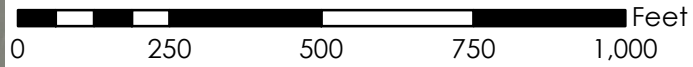
Project:	RG11401	Designed by:	AJR
Date:	1/30/2015	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	DE

**GLEN ISLE  
ARSENIC & LEAD  
INVESTIGATION**

FIGURE NO: 1

SHEET:

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Confirmation Sampling

GeoTech Boring & Confirmation

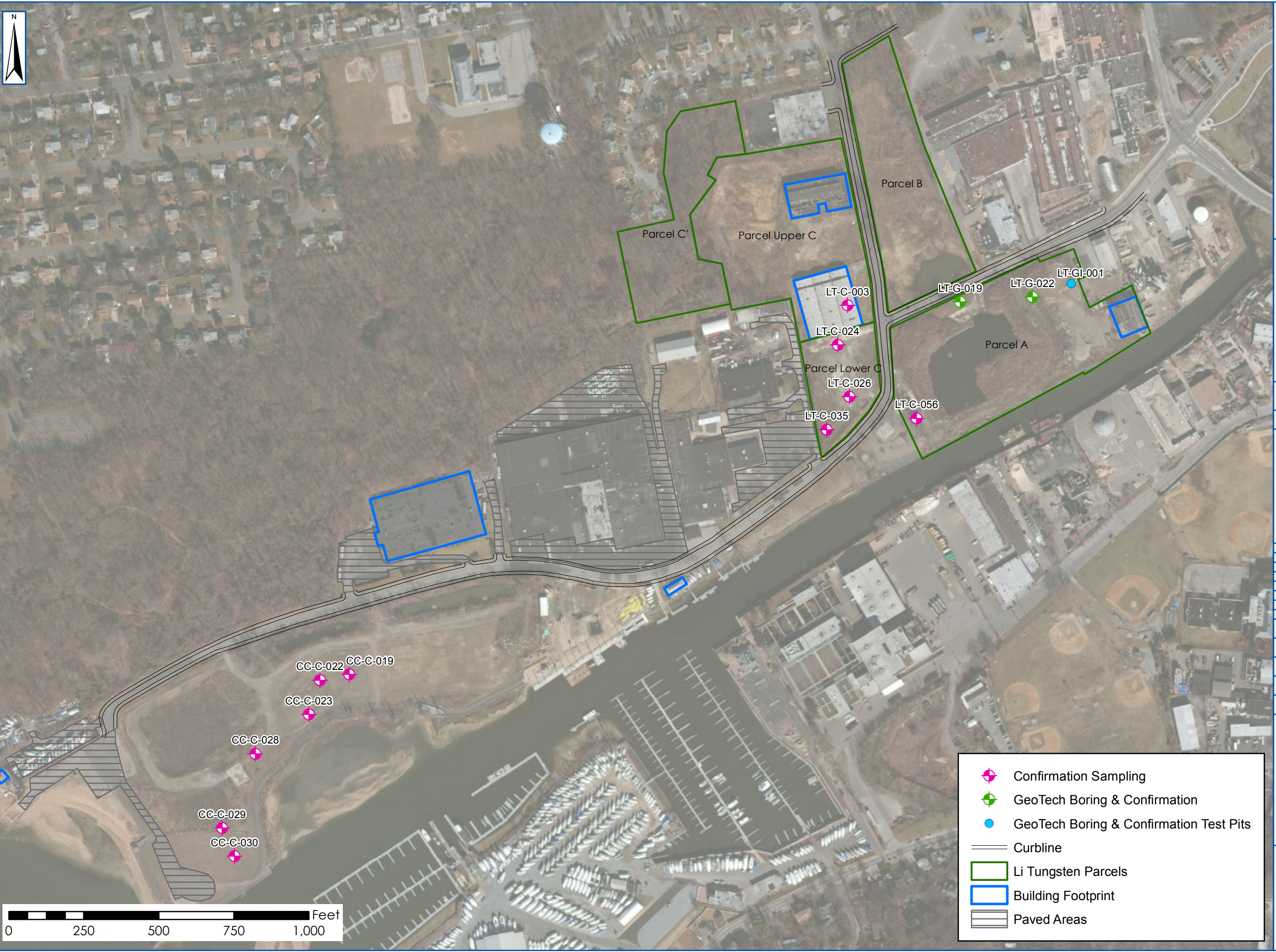
GeoTech Boring & Confirmation Test Pits

Curbline

Li Tungsten Parcels

Building Footprint

Paved Areas



## TABLES

**RGI1409 - Glen Isle**  
**Arsenic and Lead Investigation**

**Table 1**  
**Lead Results**

Lead Data									
Sample ID	Depth	Total Pb							TCLP Pb mg/L Jan 2015
		XRF Value	Data Gap Jan-Feb 2014	As/Pb Investigation					
				XRF Result	Jan 7-9, 2015	XRF Result	Jan 14-15, 2015	Jan 14-15, 2015 (Re Run)	
CC-C-019	0-2'	182	772	336	473	--	--	--	--
CC-C-022	0-2'	252	212	333	371	--	--	--	--
CC-C-023	6-8'	302	6,030	210	215	566	267	265	--
CC-C-029	8-10'	118	1,180	111	141	544	239	416	--
CC-C-030	8-10'	319	983	123	175	--	--	--	--
CC-C-030	8'	--	--	--	--	568	1,780	8,620	68.9
CC-C-030	10'	--	--	--	--	46,200	13,900	19,900	51.4
LT-C-024	2-4'	1,826	4,480	56	7.2	225	93.9	72.3	--
LT-G-022	0-2'	54	885	--	--	537	285	--	--
LT-GI-001	4-6'	300	893	--	--	227	341	--	--

Notes:

"Total" concentrations in mg/kg

TCLP concentrations in mg/L

"--" means a sample was not collected and/or analyzed

**RGI1409 - Glen Isle**  
**Arsenic and Lead Investigation**

**Table 2**  
**Arsenic Results**

Arsenic Data									
Sample ID	Depth	Total As							SPLP As µg/L Jan 2015
		XRF Value	Data Gap Jan-Feb 2014	As/Pb Investigation					
				XRF Result	Jan 7-9, 2015	XRF Result	Jan 14-15, 2015	Jan 14-15, 2015 (Re Run)	
CC-C-019	0-2'	56	1,850	684	993	--	--	--	360
CC-C-022	0-2'	56	379	49	187	--	--	--	5.9 J
CC-C-028	0-2'	8	253	41	13	50	--	--	--
CC-C-030	10'	<13	15.8	--	--	1,542	51.9	67.8	--
LT-C-003	0-2'	68	107	46	2.7	--	--	--	--
LT-C-024	2-4'	661	581	34	6.9	--	--	--	--
LT-C-026	6-8'	16	63.2	ND	4.3	--	--	--	--
LT-C-035	4-6'	230	58.6	44	652	--	--	--	200
LT-C-056	2-4'	20	105	30	13.1	--	--	--	--
LT-G-019	2-4'	177	181	ND	3.5	37	--	--	--
LT-G-022	0-2'	7	31.8	--	--	136	76.6	--	--

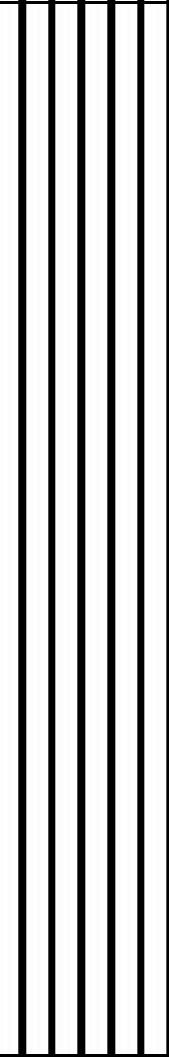

Notes:

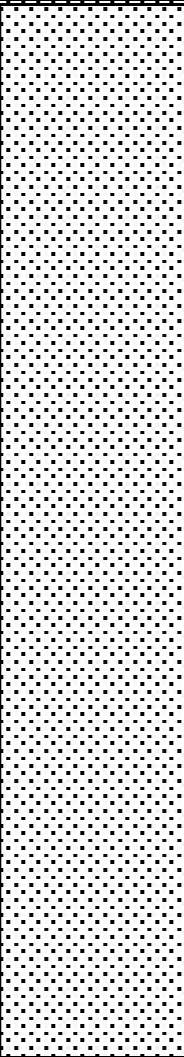

"Total" concentrations in mg/kg

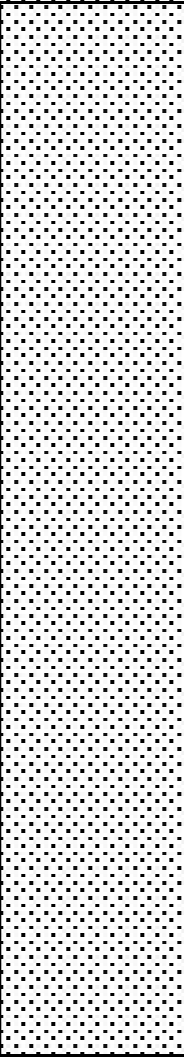

SPLP concentrations in µg/L

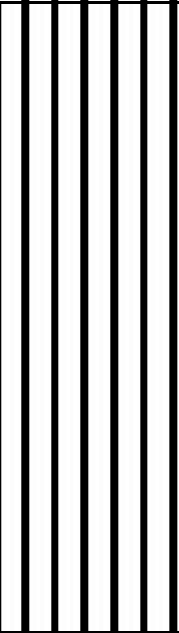

"--" means a sample was not collected and/or analyzed

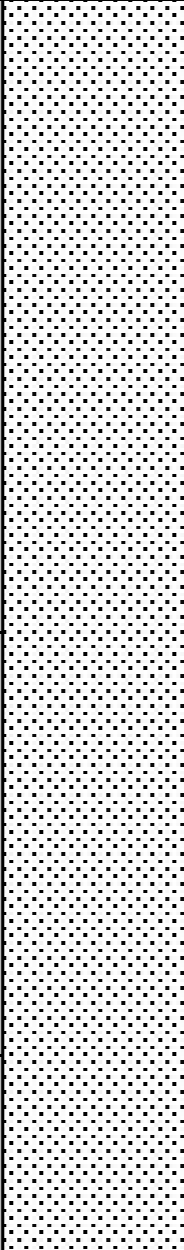

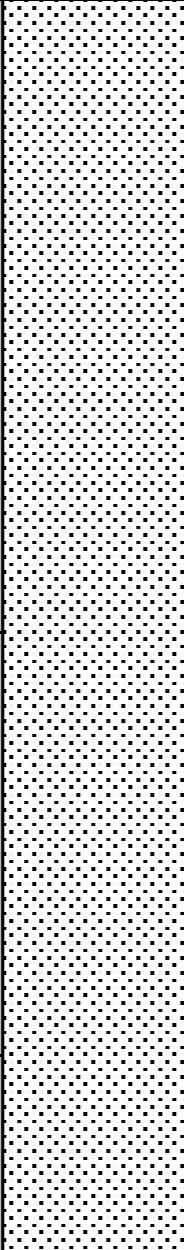
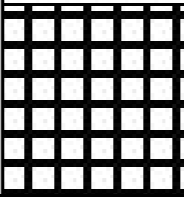

## APPENDIX A

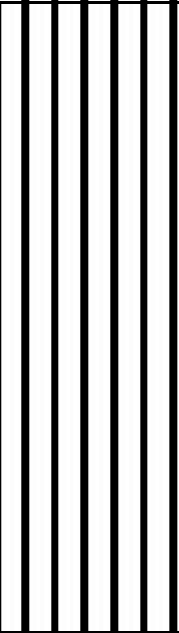

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HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600			
WEATHER:	Sunny 18-28°		SCALER:	-			-			
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	4'					
Start Time:	8:40			Completion Time:	8:45					
Start Date:	1/7/2015			Completion Date:	1/7/2015					
Sample ID:	LT-C-056(2-4)				Monitoring Action levels			As		Pb
Sample Time:	8:50							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Silty sand with gravel, some cobbles.	ND	ND	
1										
2	2	2			10YR4/3					
3										
4										

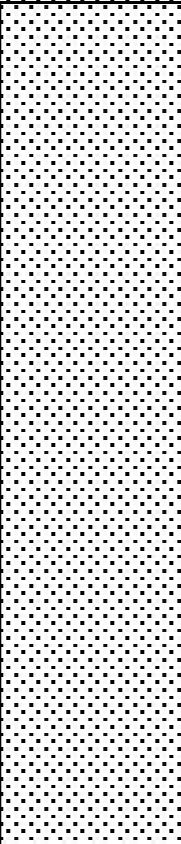

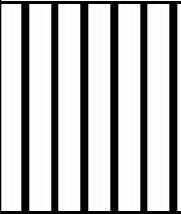
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HEALTH TECHNICIAN:	-		XRF:	Thermo Niton				XL3t 600		
WEATHER:	Sunny 18-28°		SCALER:	-				-		
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	4'					
Start Time:	9:10			Completion Time:	9:15					
Start Date:	1/7/2015			Completion Date:	1/7/2015					
Sample ID:	LT-G-019(2-4)				Monitoring Action levels			As	Pb	
Sample Time:	9:20							24ppm	400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SW-SM	10YR4/2	D	Well graded medium sand with silt and gravel.	ND	ND	
1										
2										
3	2	2							W	
4										

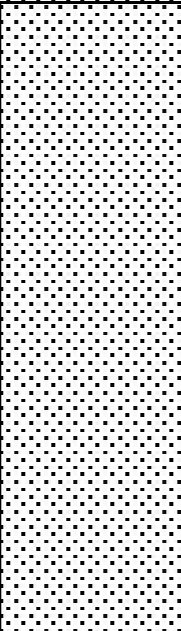

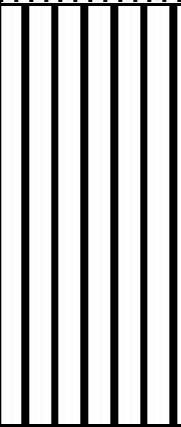

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HEALTH TECHNICIAN:	-		XRF:	Thermo Niton				XL3t 600		
WEATHER:	Partly Sunny 22-32°		SCALER:	-				-		
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	4'					
Start Time:	12:35			Completion Time:	12:45					
Start Date:	1/14/2015			Completion Date:	1/14/2015					
Sample ID:	LT-G-019(2-4)				Monitoring Action levels			As	Pb	
Sample Time:	12:50							24ppm	400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SW-SM	10YR4/2	D	Organics, poly, well graded medium sand with silt and gravel.	ND	ND	
1										
2										
3	2	2				W				
4										

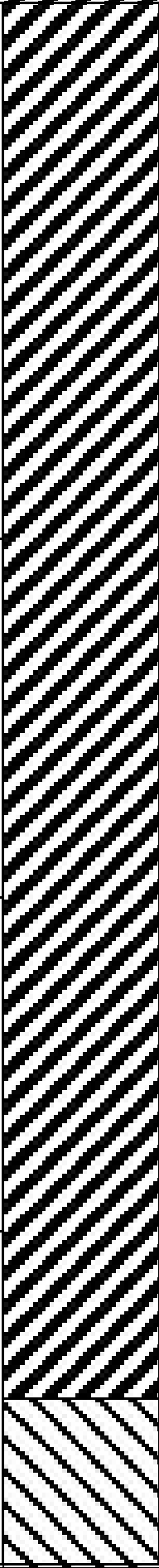



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WEATHER:	Partly Sunny 22-32°		SCALER:		-			-		
Excavation Equipment:	Hitachi 350LC Excavator				Testpit Area:		5X10			
Sampling Method:	Composite				Test Pit Depth:		2'			
Start Time:	11:30				Completion Time:		11:35			
Start Date:	1/14/2015				Completion Date:		1/14/2015			
Sample ID:	LT-G-022(0-2)				Monitoring Action levels			As		Pb
Sample Time:	11:40							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Silty sand with gravel.	136	537	
1										
2					10YR3/1	W				

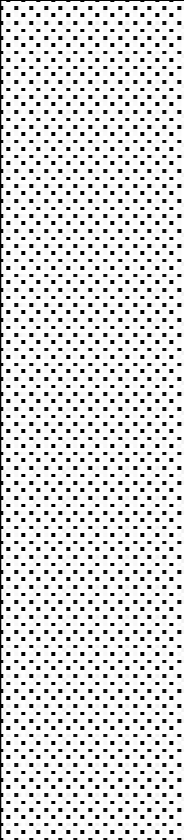

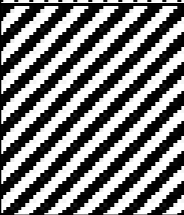

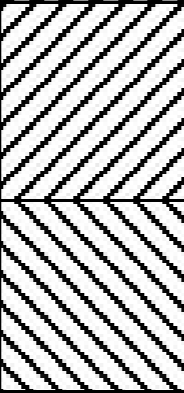

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HEALTH TECHNICIAN:	-	XRF:	Thermo Niton				XL3t 600					
WEATHER:	Partly Sunny 22-32°	SCALER:	-				-					
Excavation Equipment:	Hitachi 350LC Excavator		Testpit Area:	5X10								
Sampling Method:	Composite		Test Pit Depth:	6'								
Start Time:	12:00		Completion Time:	12:20								
Start Date:	1/14/2015		Completion Date:	1/14/2015								
Sample ID:	LT-GI-001(4-6)			Monitoring Action levels			As		Pb			
Sample Time:	12:25						24ppm		400 ppm			
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log		
0	2	2		SW-SM	10YR4/1	D	Debris, well graded fine sand with silt and gravel.	ND	ND			
1												
2												
3	2	2				SW-SM		10YR3/1	W		ND	ND
4												
5												
6	2	2		OL			10YR4/2	Bog	ND	ND		

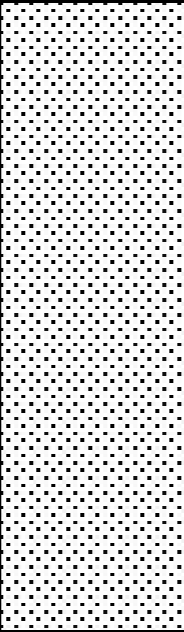

TEST PIT LOG SHEET										
TEST PIT NUMBER:	LT-C-003		Instrument		Model Number			Serial Number		
GEOLOGIST:	AR		PID:		MiniRae 2000			110-011167		
HEALTH TECHNICIAN:	-		XRF:		Thermo Niton			XL3t 600		
WEATHER:	Sunny 18-28°		SCALER:		-			-		
Excavation Equipment:	Hitachi 350LC Excavator				Testpit Area:		5X10			
Sampling Method:	Composite				Test Pit Depth:		2'			
Start Time:	10:00				Completion Time:		10:05			
Start Date:	1/7/2015				Completion Date:		1/7/2015			
Sample ID:	LT-C-003(0-2)				Monitoring Action levels			As		Pb
Sample Time:	10:10							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/3	D	Silty sand with gravel.	46	26	
1										
2					10YR3/1					

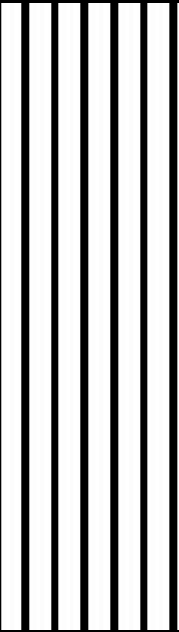

TEST PIT LOG SHEET										
TEST PIT NUMBER:	LT-C-024_1		Instrument	Model Number			Serial Number			
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167			
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600			
WEATHER:	Sunny 18-28°		SCALER:	-			-			
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	4'					
Start Time:	10:45			Completion Time:	10:50					
Start Date:	1/7/2015			Completion Date:	1/7/2015					
Sample ID:	LT-C-024(2-4)				Monitoring Action levels		As		Pb	
Sample Time:	10:55						24ppm		400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SW-SM	10YR4/1	D	Well graded medium sand wiith silt and gravel.	ND	ND	
1										
2										
3	2	2			SM		10YR4/3	Silty sand with gravel	34	
4										

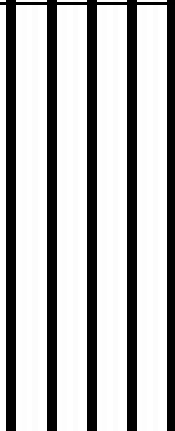

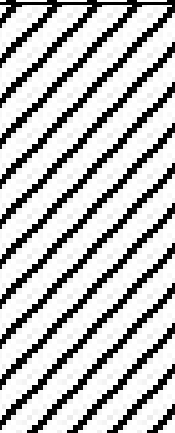

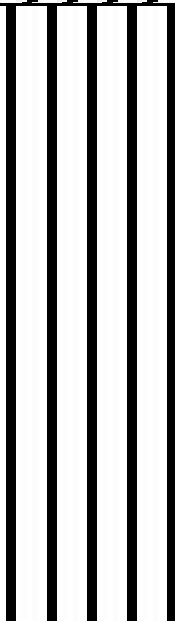

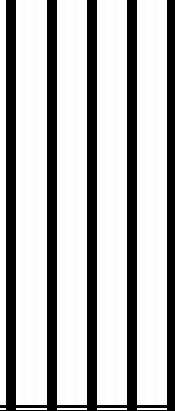

TEST PIT LOG SHEET										
TEST PIT NUMBER:	LT-C-024_2		Instrument	Model Number				Serial Number		
GEOLOGIST:	AR		PID:	MiniRae 2000				110-011167		
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton				XL3t 600		
WEATHER:	Partly Sunny 22-32°		SCALER:	-				-		
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	4'					
Start Time:	15:25			Completion Time:	15:35					
Start Date:	1/14/2015			Completion Date:	1/14/2015					
Sample ID:	LT-C-024(2-4)				Monitoring Action levels			As	Pb	
Sample Time:	15:40							24ppm	400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SW-SM	10YR4/1	D	Well graded medium sand wiith silt and gravel.	ND	ND	
1					2					
2					10YR3/1					
3	2	2		SM	10YR4/3	W	Silty sand with gravel	61	225	
4										

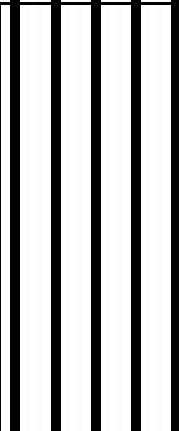

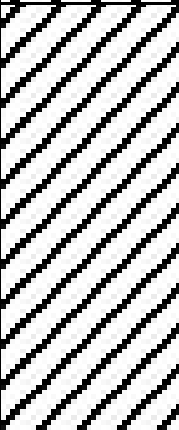
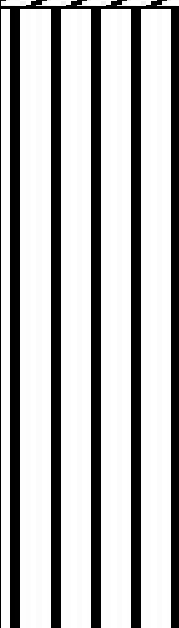
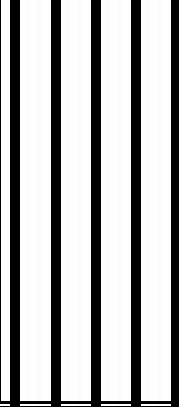

TEST PIT LOG SHEET											
TEST PIT NUMBER:	LT-C-026		Instrument	Model Number			Serial Number				
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167				
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600				
WEATHER:	Sunny 18-28°		SCALER:	-			-				
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10						
Sampling Method:	Composite			Test Pit Depth:	8'						
Start Time:	11:15			Completion Time:	11:30						
Start Date:	1/7/2015			Completion Date:	1/7/2015						
Sample ID:	LT-C-026(6-8)				Monitoring Action levels		As		Pb		
Sample Time:	11:35						24ppm		400 ppm		
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log	
0	2	2		GC	10YR4/2	D	RCA, gravelly sand	ND	ND		
1											
2											
3	2	2						ND	ND		
4											
5	2	2						ND	ND		
6											
7	2	2		ND	49						
8											
			CL	10YR6/1	W		Clay				

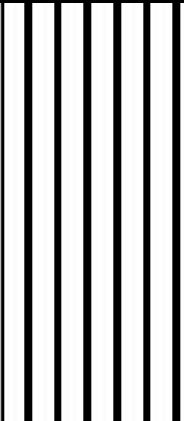


TEST PIT LOG SHEET										
TEST PIT NUMBER:	LT-C-035		Instrument	Model Number				Serial Number		
GEOLOGIST:	AR		PID:	MiniRae 2000				110-011167		
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton				XL3t 600		
WEATHER:	Sunny 18-28°		SCALER:	-				-		
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	6'					
Start Time:	11:50			Completion Time:	12:00					
Start Date:	1/7/2015			Completion Date:	1/7/2015					
Sample ID:	LT-C-035(4-6)				Monitoring Action levels			As	Pb	
Sample Time:	12:05							24ppm	400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SW-SM	10YR4/1	D	Organics, well graded medium sand with silt and gravel.	ND	ND	
1										
2										
3	2	2		GC			Gravelly sand	ND	ND	
4										
5	2	2		SC	10YR3/1	W	Clayey sand	44	118	
6										

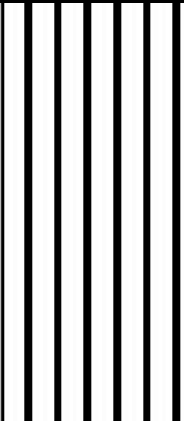


TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-022		Instrument	Model Number			Serial Number			
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167			
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600			
WEATHER:	Snow 19-32°		SCALER:	-			-			
Excavation Equipment:	Hitachi 270LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	2'					
Start Time:	8:15			Completion Time:	8:20					
Start Date:	1/9/2015			Completion Date:	1/9/2015					
Sample ID:	CC-C-022(0-2)				Monitoring Action levels			As		Pb
Sample Time:	8:25							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SW-SM	10YR4/1	D	Debris, well graded fine-medium sand with silt and gravel.	49	333	
1										
2					10YR3/1					

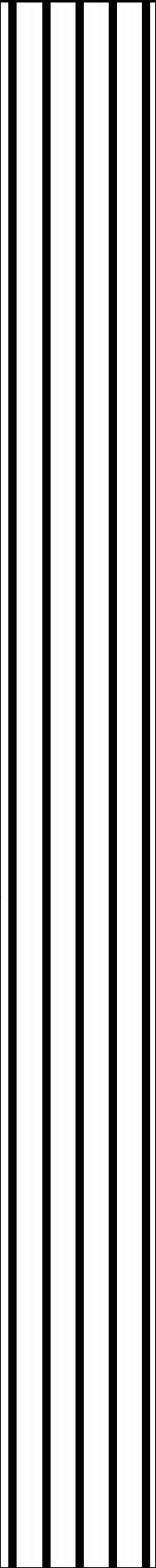




TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-019		Instrument		Model Number			Serial Number		
GEOLOGIST:	AR		PID:		MiniRae 2000			110-011167		
HEALTH TECHNICIAN:	-		XRF:		Thermo Niton			XL3t 600		
WEATHER:	Snow 19-32°		SCALER:		-			-		
Excavation Equipment:	Hitachi 270LC Excavator				Testpit Area:		5X10			
Sampling Method:	Composite				Test Pit Depth:		2'			
Start Time:	8:35				Completion Time:		8:40			
Start Date:	1/9/2015				Completion Date:		1/9/2015			
Sample ID:	CC-C-019(0-2)				Monitoring Action levels			As		Pb
Sample Time:	8:45							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Orange fencing, silty sand with gravel.	684	336	
1										
2					10YR3/1					

TEST PIT LOG SHEET											
TEST PIT NUMBER:	CC-C-023_1		Instrument	Model Number			Serial Number				
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167				
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600				
WEATHER:	Snow 19-32°		SCALER:	-			-				
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10						
Sampling Method:	Composite			Test Pit Depth:	8'						
Start Time:	8:55			Completion Time:	9:05						
Start Date:	1/9/2015			Completion Date:	1/9/2015						
Sample ID:	CC-C-023(6-8)				Monitoring Action levels		As		Pb		
Sample Time:	9:10						24ppm		400 ppm		
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log	
0	2	2		SM	10YR3/2	D	Orange fencing, silty sand with gravel	6	126		
1											
2											
3	2	2		SC	Clayey sand with Gravel		28	197			
4											
5	2	2		SM	10YR3/1		Silty sand with gravel	ND	272		
6											
7	2	2		SM	10YR3/1		Silty sand with gravel	61	210		
8											

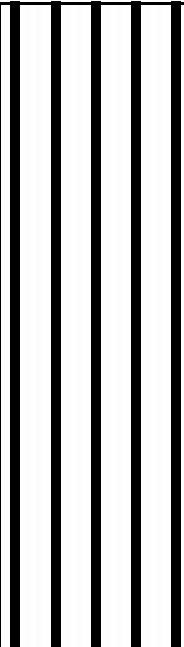

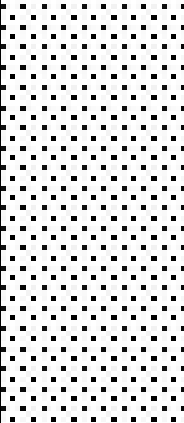

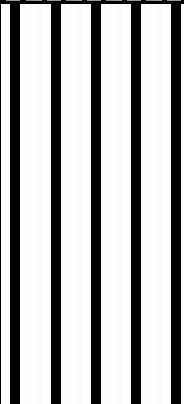

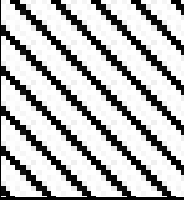

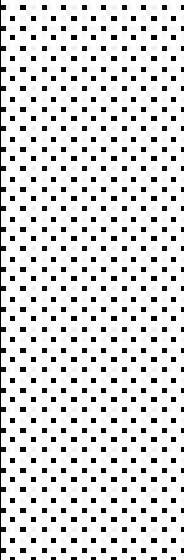

TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-023_2		Instrument	Model Number			Serial Number			
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167			
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600			
WEATHER:	Partly Sunny 19-34°		SCALER:	-			-			
Excavation Equipment:	Hitachi 270LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	8'					
Start Time:	8:40			Completion Time:	9:00					
Start Date:	1/15/2015			Completion Date:	1/15/2015					
Sample ID:	CC-C-023(6-8)				Monitoring Action levels		As		Pb	
Sample Time:	9:05						24ppm		400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/2	D	Orange fencing, silty sand with gravel	NM	NM	
1										
2										
3	2	2		SC	10YR3/1	D	Clayey sand with Gravel	NM	NM	
4										
5	2	2		SM	10YR3/1	D	Silty sand with gravel	NM	NM	
6										
7	2	2		SM	10YR5/1	M	Silty sand with gravel	ND	566	
8										

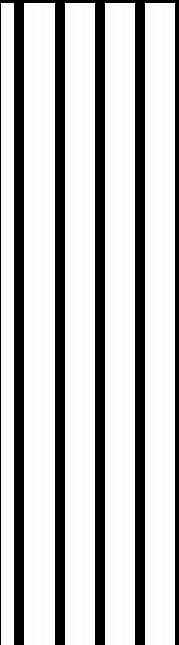

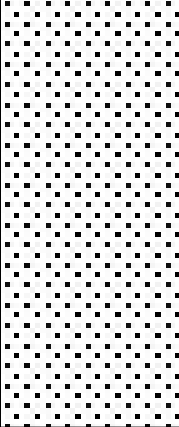
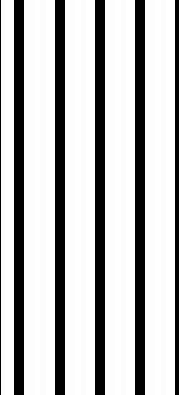
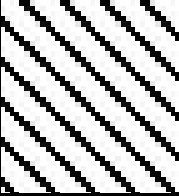
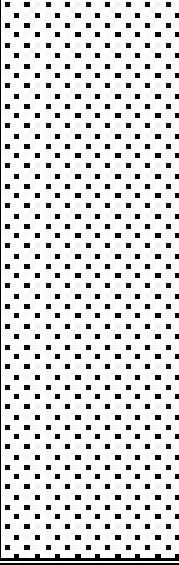
TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-028_1			Instrument	Model Number			Serial Number		
GEOLOGIST:	AR			PID:	MiniRae 2000			110-011167		
HEALTH TECHNICIAN:	-			XRF:	Thermo Niton			XL3t 600		
WEATHER:	Snow 19-32°			SCALER:	-			-		
Excavation Equipment:	Hitachi 270LC Excavator				Testpit Area:	5X10				
Sampling Method:	Composite				Test Pit Depth:	2'				
Start Time:	9:20				Completion Time:	9:25				
Start Date:	1/9/2015				Completion Date:	1/9/2015				
Sample ID:	CC-C-028(0-2)					Monitoring Action levels		As		Pb
Sample Time:	9:30							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Fabric, silty sand with gravel.	41	60	
1										
2							SC			

TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-028_2			Instrument	Model Number			Serial Number		
GEOLOGIST:	AR			PID:	MiniRae 2000			110-011167		
HEALTH TECHNICIAN:	-			XRF:	Thermo Niton			XL3t 600		
WEATHER:	Partly Sunny 19-34°			SCALER:	-			-		
Excavation Equipment:	Hitachi 270LC Excavator				Testpit Area:	5X10				
Sampling Method:	Composite				Test Pit Depth:	2'				
Start Time:	9:20				Completion Time:	9:25				
Start Date:	1/15/2015				Completion Date:	1/15/2015				
Sample ID:	CC-C-028(0-2)				Monitoring Action levels			As		Pb
Sample Time:	9:30							24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Silty sand with gravel.	50	70	
1										
2				SC	10YR5/1		Clayey sand.			

TEST PIT LOG SHEET												
TEST PIT NUMBER:	CC-C-029_1		Instrument	Model Number			Serial Number					
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167					
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600					
WEATHER:	Snow 19-32°		SCALER:	-			-					
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10							
Sampling Method:	Composite			Test Pit Depth:	10'							
Start Time:	9:35			Completion Time:	9:45							
Start Date:	1/9/2015			Completion Date:	1/9/2015							
Sample ID:	CC-C-029(8-10)			Monitoring Action levels			As		Pb			
Sample Time:	9:50						24ppm		400 ppm			
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log		
0	2	2		SM	10YR3/2	D	Silty sand with gravel.	ND	87			
1												
2												
3	2	2			W	Wood, wires, silty sand with gravel.		5	101			
4												
5	2	2			D			18	26			
6												
7	2	2		10YR4/1			ND	93				
8												
9	2	2		SC		10YR5/1	Clayey sand with gravel.	ND				
10												

TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-029_2		Instrument	Model Number			Serial Number			
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167			
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600			
WEATHER:	Partly Sunny 19-34°		SCALER:	-			-			
Excavation Equipment:	Hitachi 270LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	10'					
Start Time:	9:40			Completion Time:	10:00					
Start Date:	1/15/2015			Completion Date:	1/15/2015					
Sample ID:	CC-C-029(8-10)			Monitoring Action levels			As		Pb	
Sample Time:	10:05						24ppm		400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR3/2	D	Silty sand with gravel.	NM	NM	
1										
2										
3	2	2			W	NM		NM		
4										
5	2	2			10YR3/1	D		Wood, wires, silty sand with gravel.	NM	
6										
7	2	2		10YR4/1	D	NM	NM			
8										
9	2	2			SC	10YR3/1	D	Debris, clayey sand with gravel.	ND	
10										

TEST PIT LOG SHEET										
TEST PIT NUMBER:	CC-C-030_1		Instrument	Model Number			Serial Number			
GEOLOGIST:	AR		PID:	MiniRae 2000			110-011167			
HEALTH TECHNICIAN:	-		XRF:	Thermo Niton			XL3t 600			
WEATHER:	Snow 19-32°		SCALER:	-			-			
Excavation Equipment:	Hitachi 350LC Excavator			Testpit Area:	5X10					
Sampling Method:	Composite			Test Pit Depth:	10'					
Start Time:	10:45			Completion Time:	11:00					
Start Date:	1/9/2015			Completion Date:	1/9/2015					
Sample ID:	CC-C-030(8-10)			Monitoring Action levels			As		Pb	
Sample Time:	11:05						24ppm		400 ppm	
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Silty sand with gravel.	ND	87	
1										
2										
3	2	2		SW-SM	10YR3/1		Well graded fine sand with silt and gravel.	ND	180	
4										
5	2	2		SM	10YR4/1		Silty sand with gravel, some cobbles.	ND	100	
6										
7	2	2		CL	10YR5/1		Clay with gravel.	ND	98	
8										
9	2	2		SW	10YR4/3		Well graded medium sand	ND	123	
10										

TEST PIT LOG SHEET										
TEST PIT NUMBER:		CC-C-030_2		Instrument		Model Number		Serial Number		
GEOLOGIST:		AR		PID:		MiniRae 2000		110-011167		
HEALTH TECHNICIAN:		-		XRF:		Thermo Niton		XL3t 600		
WEATHER:		Partly Sunny 19-34°		SCALER:		-		-		
Excavation Equipment:		Hitachi 270LC Excavator				Testpit Area:		5X10		
Sampling Method:		Composite				Test Pit Depth:		10'		
Start Time:		10:20				Completion Time:		10:40		
Start Date:		1/15/2015				Completion Date:		1/15/2015		
Sample ID:		CC-C-030(8)		CC-C-030(10)		Monitoring Action levels		As		Pb
Sample Time:		11:25		11:30				24ppm		400 ppm
Depth (ft)	Advance (ft)	Recovery (ft)	Graphic Log	USCS Code	Soil Color	Moisture Content	Soil Description	As (ppm)	Pb (ppm)	Photo Log
0	2	2		SM	10YR4/1	D	Silty sand with gravel.	NM	NM	
1										
2										
3	2	2		SW-SM	10YR3/1		Well graded fine sand with silt and gravel.	NM	NM	
4										
5	2	2		SM	10YR4/4		Silty sand with gravel, some cobbles.	NM	NM	
6										
7	2	2		CL	10YR5/1		Clay with gravel.	NM	NM	
8										
9	2	2		SW	10YR4/4		Debris, well graded medium sand	ND	568	
10					10YR2/1	1,542		46,200		

## APPENDIX B

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-73951-2

Client Project/Site: Glen Isle: Data Gap Field Program

For:

Posillico Consulting

1750 New Highway

Farmingdale, New York 11735

Attn: Ellis Koch



Authorized for release by:

1/19/2015 5:07:59 PM

John Schove, Project Manager II

(716)504-9838

[john.schove@testamericainc.com](mailto:john.schove@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## Definitions/Glossary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

### Qualifiers

#### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Case Narrative

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

**Job ID: 480-73951-2**

**Laboratory: TestAmerica Buffalo**

### Narrative

**Job Narrative**  
**480-73951-2**

### Comments

No additional comments.

### Receipt

The samples were received on 1/10/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.1° C.

### Metals

Method(s) 6010C: The following sample(s) was diluted due to the presence of Molybdenum which interferes with Arsenic: (480-73951-6 MS), (480-73951-6 MSD), (480-73951-6 PDS), (480-73951-6 SD), LT-C-035 (4-6) (480-73951-6). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Detection Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

### Client Sample ID: LT-C-035 (4-6)

### Lab Sample ID: 480-73951-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.20		0.15	0.056	mg/L	10		6010C	SPLP East

### Client Sample ID: CC-C-022 (0-2)

### Lab Sample ID: 480-73951-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0059	J	0.015	0.0056	mg/L	1		6010C	SPLP East

### Client Sample ID: CC-C-019 (0-2)

### Lab Sample ID: 480-73951-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.36		0.015	0.0056	mg/L	1		6010C	SPLP East

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

**Client Sample ID: LT-C-035 (4-6)**

**Lab Sample ID: 480-73951-6**

**Date Collected: 01/07/15 12:05**

**Matrix: Solid**

**Date Received: 01/10/15 09:00**

**Method: 6010C - Metals (ICP) - SPLP East**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.20		0.15	0.056	mg/L		01/15/15 11:00	01/19/15 11:25	10

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

**Client Sample ID: CC-C-022 (0-2)**

**Lab Sample ID: 480-73951-7**

**Date Collected: 01/09/15 08:25**

**Matrix: Solid**

**Date Received: 01/10/15 09:00**

**Method: 6010C - Metals (ICP) - SPLP East**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0059	J	0.015	0.0056	mg/L		01/15/15 11:00	01/16/15 21:31	1

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

**Client Sample ID: CC-C-019 (0-2)**

**Lab Sample ID: 480-73951-8**

**Date Collected: 01/09/15 08:45**

**Matrix: Solid**

**Date Received: 01/10/15 09:00**

**Method: 6010C - Metals (ICP) - SPLP East**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.36		0.015	0.0056	mg/L		01/15/15 11:00	01/16/15 21:41	1

# QC Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-223090/2-A  
Matrix: Solid  
Analysis Batch: 223387

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 223090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015	U	0.015	0.0056	mg/L	—	01/15/15 11:00	01/16/15 21:12	1

Lab Sample ID: LCS 480-223090/3-A  
Matrix: Solid  
Analysis Batch: 223387

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 223090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.937		mg/L	—	94	80 - 120

Lab Sample ID: LB 480-222886/1-B  
Matrix: Solid  
Analysis Batch: 223387

Client Sample ID: Method Blank  
Prep Type: SPLP East  
Prep Batch: 223090

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015	U	0.015	0.0056	mg/L	—	01/15/15 11:00	01/16/15 21:09	1

Lab Sample ID: 480-73951-6 MS  
Matrix: Solid  
Analysis Batch: 223465

Client Sample ID: LT-C-035 (4-6)  
Prep Type: SPLP East  
Prep Batch: 223090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.20		1.00	1.18		mg/L	—	99	75 - 125

Lab Sample ID: 480-73951-6 MSD  
Matrix: Solid  
Analysis Batch: 223465

Client Sample ID: LT-C-035 (4-6)  
Prep Type: SPLP East  
Prep Batch: 223090

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.20		1.00	1.18		mg/L	—	99	75 - 125	0	20

# QC Association Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

## Metals

### Leach Batch: 222886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-73951-6	LT-C-035 (4-6)	SPLP East	Solid	1312	
480-73951-6 MS	LT-C-035 (4-6)	SPLP East	Solid	1312	
480-73951-6 MSD	LT-C-035 (4-6)	SPLP East	Solid	1312	
480-73951-7	CC-C-022 (0-2)	SPLP East	Solid	1312	
480-73951-8	CC-C-019 (0-2)	SPLP East	Solid	1312	
LB 480-222886/1-B	Method Blank	SPLP East	Solid	1312	

### Prep Batch: 223090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-73951-6	LT-C-035 (4-6)	SPLP East	Solid	3010A	222886
480-73951-6 MS	LT-C-035 (4-6)	SPLP East	Solid	3010A	222886
480-73951-6 MSD	LT-C-035 (4-6)	SPLP East	Solid	3010A	222886
480-73951-7	CC-C-022 (0-2)	SPLP East	Solid	3010A	222886
480-73951-8	CC-C-019 (0-2)	SPLP East	Solid	3010A	222886
LB 480-222886/1-B	Method Blank	SPLP East	Solid	3010A	222886
LCS 480-223090/3-A	Lab Control Sample	Total/NA	Solid	3010A	
MB 480-223090/2-A	Method Blank	Total/NA	Solid	3010A	

### Analysis Batch: 223387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-73951-7	CC-C-022 (0-2)	SPLP East	Solid	6010C	223090
480-73951-8	CC-C-019 (0-2)	SPLP East	Solid	6010C	223090
LB 480-222886/1-B	Method Blank	SPLP East	Solid	6010C	223090
LCS 480-223090/3-A	Lab Control Sample	Total/NA	Solid	6010C	223090
MB 480-223090/2-A	Method Blank	Total/NA	Solid	6010C	223090

### Analysis Batch: 223465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-73951-6	LT-C-035 (4-6)	SPLP East	Solid	6010C	223090
480-73951-6 MS	LT-C-035 (4-6)	SPLP East	Solid	6010C	223090
480-73951-6 MSD	LT-C-035 (4-6)	SPLP East	Solid	6010C	223090

## Lab Chronicle

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

**Client Sample ID: LT-C-035 (4-6)**

**Date Collected: 01/07/15 12:05**

**Date Received: 01/10/15 09:00**

**Lab Sample ID: 480-73951-6**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			222886	01/14/15 09:09	MRB	TAL BUF
SPLP East	Prep	3010A			223090	01/15/15 11:00	KJ1	TAL BUF
SPLP East	Analysis	6010C		10	223465	01/19/15 11:25	TRB	TAL BUF

**Client Sample ID: CC-C-022 (0-2)**

**Date Collected: 01/09/15 08:25**

**Date Received: 01/10/15 09:00**

**Lab Sample ID: 480-73951-7**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			222886	01/14/15 09:09	MRB	TAL BUF
SPLP East	Prep	3010A			223090	01/15/15 11:00	KJ1	TAL BUF
SPLP East	Analysis	6010C		1	223387	01/16/15 21:31	TRB	TAL BUF

**Client Sample ID: CC-C-019 (0-2)**

**Date Collected: 01/09/15 08:45**

**Date Received: 01/10/15 09:00**

**Lab Sample ID: 480-73951-8**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			222886	01/14/15 09:09	MRB	TAL BUF
SPLP East	Prep	3010A			223090	01/15/15 11:00	KJ1	TAL BUF
SPLP East	Analysis	6010C		1	223387	01/16/15 21:41	TRB	TAL BUF

### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Certification Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

### Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15
Analysis Method	Prep Method	Matrix	Analyte	

## Method Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF

### Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Sample Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-73951-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-73951-6	LT-C-035 (4-6)	Solid	01/07/15 12:05	01/10/15 09:00
480-73951-7	CC-C-022 (0-2)	Solid	01/09/15 08:25	01/10/15 09:00
480-73951-8	CC-C-019 (0-2)	Solid	01/09/15 08:45	01/10/15 09:00

## CHAIN OF CUSTODY / ANALYSIS REQUEST

Page 1 of 2

Name (for report and invoice) <b>Ellis Koch</b>		Samplers Name (Printed) <b>Amanta J. Rancaniello</b>		Site/Project Identification <b>Glen Isle Waterfront Redevelopment</b>	
Company <b>R/R - Glen Isle Partners, LLC</b>		P. O. #		State (Location of site): NJ: <input type="checkbox"/> NY: <input type="checkbox"/> Other: <input type="checkbox"/>	
Address <b>625 R/R Plaza</b>		Analysis Turnaround Time Standard <input type="checkbox"/> Rush Charges Authorized For: <b>24 Hr</b>		Regulatory Program:	
City <b>Uniondale, N.Y.</b>		Rush Charges Authorized For: 2 Week <input type="checkbox"/> 1 Week <input type="checkbox"/> TAT <input checked="" type="checkbox"/>			
Phone		Fax			
State		No. of:		LAB USE ONLY	
		Time Matrix		Project No:	
Sample Identification		Date		Job No:	
				Sample Numbers	
LT-C-056(2-4)		1/7/15 0850 Soil 2			
LT-G-019(2-4) *		1/7/15 0920			
LT-C-003(0-2) *		1/7/15 1010			
LT-C-024(2-4) *		1/7/15 1055			
LT-C-026(6-8) *		1/7/15 1135			
LT-C-035(4-6)		1/7/15 1205			
CC-C-022(0-2)		1/9/15 0825			
CC-C-019(0-2)		1/9/15 0845			
CC-C-023(6-8) *		1/9/15 0910			
CC-C-028(0-2)		1/9/15 0930			
Preservation Used: 1 = ICE, 2 = HCl, 3 = H <sub>2</sub> SO <sub>4</sub> , 4 = HNO <sub>3</sub> , 5 = NaOH		Soil: <input checked="" type="checkbox"/> Water: <input type="checkbox"/>			
6 = Other <input type="checkbox"/> 7 = Other <input type="checkbox"/>					



480-73951 Chain of Custody

Special Instructions: <b>*Run Totals*</b> first only on SPUR TCAP if Totals are detected		Water Metals Filtered (Yes/No)?	
Relinquished by <b>Andri Railik</b>	Company <b>PWGC</b>	Date / Time <b>1/9/15 1305</b>	Received by <b>[Signature]</b>
Relinquished by <b>F. Samir</b>	Company <b>T.A.</b>	Date / Time <b>01-09-15 11:00</b>	Received by <b>[Signature]</b>
Relinquished by	Company	Date / Time	Received by
Relinquished by	Company	Date / Time	Received by
Relinquished by	Company	Date / Time	Received by

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).  
Massachusetts (M-NJ312), North Carolina (No. 578)

Temp 1.1 #2

## THE LEADER IN ENVIRONMENTAL TESTING

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6 = Other  
7 = Other  
Water:

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

Massachusetts (M-NJ312), North Carolina (No. 578)

ITAL - 0016 (0814)

Tempilil #2

## Login Sample Receipt Checklist

Client: Posillico Consulting

Job Number: 480-73951-2

**Login Number: 73951**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Kolb, Chris M**

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	PWGC
Samples received within 48 hours of sampling.	False	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-74220-1

Client Project/Site: Glen Isle: Data Gap Field Program

For:

Posillico Consulting

1750 New Highway

Farmingdale, New York 11735

Attn: Ellis Koch



Authorized for release by:

1/16/2015 4:11:39 PM

Rebecca Jones, Project Management Assistant I

[rebecca.jones@testamericainc.com](mailto:rebecca.jones@testamericainc.com)

Designee for

John Schove, Project Manager II

(716)504-9838

[john.schove@testamericainc.com](mailto:john.schove@testamericainc.com)

### LINKS

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Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Definitions/Glossary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

### Qualifiers

#### Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F2	MS/MSD RPD exceeds control limits
U	Indicates the analyte was analyzed for but not detected.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Case Narrative

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

**Job ID: 480-74220-1**

**Laboratory: TestAmerica Buffalo**

### Narrative

#### Job Narrative 480-74220-1

### Comments

No additional comments.

### Receipt

The samples were received on 1/15/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

### Metals

Method(s) 6010C: The serial dilution performed for the following sample(s) associated with batch 480-223134 was outside control limits for lead: (480-74220-2 SD). The post spike recovery was compliant so no corrective action is needed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## Detection Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

### Client Sample ID: LT-G-022 (0-2)

### Lab Sample ID: 480-74220-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	76.6		2.3	0.47	mg/Kg	1	☼	6010C	Total/NA
Lead	285		1.2	0.28	mg/Kg	1	☼	6010C	Total/NA

### Client Sample ID: LT-GI-001 (4-6)

### Lab Sample ID: 480-74220-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	341		1.1	0.27	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

**Client Sample ID: LT-G-022 (0-2)**

**Lab Sample ID: 480-74220-1**

**Date Collected: 01/14/15 11:40**

**Matrix: Solid**

**Date Received: 01/15/15 09:30**

**Percent Solids: 86.6**

**Method: 6010C - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	76.6		2.3	0.47	mg/Kg	☼	01/15/15 13:49	01/16/15 10:54	1
Lead	285		1.2	0.28	mg/Kg	☼	01/15/15 13:49	01/16/15 10:54	1

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

**Client Sample ID: LT-GI-001 (4-6)**

**Lab Sample ID: 480-74220-2**

**Date Collected: 01/14/15 12:25**

**Matrix: Solid**

**Date Received: 01/15/15 09:30**

**Percent Solids: 88.4**

**Method: 6010C - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	341		1.1	0.27	mg/Kg	☼	01/15/15 13:49	01/16/15 10:57	1

# QC Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-223134/1-A

Matrix: Solid

Analysis Batch: 223277

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223134

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.9	U	1.9	0.38	mg/Kg		01/15/15 13:49	01/16/15 10:49	1
Lead	0.96	U	0.96	0.23	mg/Kg		01/15/15 13:49	01/16/15 10:49	1

Lab Sample ID: LCSSRM 480-223134/2-A

Matrix: Solid

Analysis Batch: 223277

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223134

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	150	114.1		mg/Kg		76.0	70.9 - 129.8
Lead	252	217.1		mg/Kg		86.0	75.6 - 124.8

Lab Sample ID: 480-74220-2 MS

Matrix: Solid

Analysis Batch: 223277

Client Sample ID: LT-GI-001 (4-6)

Prep Type: Total/NA

Prep Batch: 223134

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	341		41.7	184.4	4	mg/Kg	✱	-377	75 - 125

Lab Sample ID: 480-74220-2 MSD

Matrix: Solid

Analysis Batch: 223277

Client Sample ID: LT-GI-001 (4-6)

Prep Type: Total/NA

Prep Batch: 223134

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	341		46.4	629.0	4 F2	mg/Kg	✱	619	75 - 125	109	20

TestAmerica Buffalo

## QC Association Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

### Metals

#### Prep Batch: 223134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74220-1	LT-G-022 (0-2)	Total/NA	Solid	3050B	
480-74220-2	LT-GI-001 (4-6)	Total/NA	Solid	3050B	
480-74220-2 MS	LT-GI-001 (4-6)	Total/NA	Solid	3050B	
480-74220-2 MSD	LT-GI-001 (4-6)	Total/NA	Solid	3050B	
LCSSRM 480-223134/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-223134/1-A	Method Blank	Total/NA	Solid	3050B	

#### Analysis Batch: 223277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74220-1	LT-G-022 (0-2)	Total/NA	Solid	6010C	223134
480-74220-2	LT-GI-001 (4-6)	Total/NA	Solid	6010C	223134
480-74220-2 MS	LT-GI-001 (4-6)	Total/NA	Solid	6010C	223134
480-74220-2 MSD	LT-GI-001 (4-6)	Total/NA	Solid	6010C	223134
LCSSRM 480-223134/2-A	Lab Control Sample	Total/NA	Solid	6010C	223134
MB 480-223134/1-A	Method Blank	Total/NA	Solid	6010C	223134

### General Chemistry

#### Analysis Batch: 223163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74220-1	LT-G-022 (0-2)	Total/NA	Solid	Moisture	
480-74220-2	LT-GI-001 (4-6)	Total/NA	Solid	Moisture	

# Lab Chronicle

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

**Client Sample ID: LT-G-022 (0-2)**

**Date Collected: 01/14/15 11:40**

**Date Received: 01/15/15 09:30**

**Lab Sample ID: 480-74220-1**

**Matrix: Solid**

**Percent Solids: 86.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			223134	01/15/15 13:49	TAS	TAL BUF
Total/NA	Analysis	6010C		1	223277	01/16/15 10:54	SLB	TAL BUF
Total/NA	Analysis	Moisture		1	223163	01/15/15 21:01	CMK	TAL BUF

**Client Sample ID: LT-GI-001 (4-6)**

**Date Collected: 01/14/15 12:25**

**Date Received: 01/15/15 09:30**

**Lab Sample ID: 480-74220-2**

**Matrix: Solid**

**Percent Solids: 88.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			223134	01/15/15 13:49	TAS	TAL BUF
Total/NA	Analysis	6010C		1	223277	01/16/15 10:57	SLB	TAL BUF
Total/NA	Analysis	Moisture		1	223163	01/15/15 21:01	CMK	TAL BUF

## Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Certification Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

### Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

## Method Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF

### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Sample Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74220-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-74220-1	LT-G-022 (0-2)	Solid	01/14/15 11:40	01/15/15 09:30
480-74220-2	LT-GI-001 (4-6)	Solid	01/14/15 12:25	01/15/15 09:30

## THE LEADER IN ENVIRONMENTAL TESTING

## Page of



480-74220 Chain of Custody

**Preservation Used:** 1 = ICE, 2 = HCl, 3 = H<sub>2</sub>SO<sub>4</sub>, 4 = HNO<sub>3</sub>, 5 = NaOH  
6 = Other, 7 = Other

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) <i>[Signature]</i>	PWGC	11/14/15 1320	1) <i>[Signature]</i>	TA
2) <i>[Signature]</i>	TA	01-14-15 16:00	2) <i>[Signature]</i>	TA Buff
3) <i>[Signature]</i>			3) <i>[Signature]</i>	
4) <i>[Signature]</i>			4) <i>[Signature]</i>	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

Massachusetts (M-NJ312), North Carolina (No. 578)

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## Login Sample Receipt Checklist

Client: Posillico Consulting

Job Number: 480-74220-1

**Login Number: 74220**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Robison, Zachary J**

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	PWGC
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-74300-1

Client Project/Site: Glen Isle: Data Gap Field Program

Revision: 1

For:

Posillico Consulting

1750 New Highway

Farmingdale, New York 11735

Attn: Ellis Koch



Authorized for release by:

2/4/2015 10:35:14 AM

John Schove, Project Manager II

(716)504-9838

[john.schove@testamericainc.com](mailto:john.schove@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## Definitions/Glossary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

### Qualifiers

#### Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F2	MS/MSD RPD exceeds control limits
U	Indicates the analyte was analyzed for but not detected.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Case Narrative

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Job ID: 480-74300-1**

**Laboratory: TestAmerica Buffalo**

### Narrative

#### Job Narrative 480-74300-1

### Revision

This report has been revised to correct calculation errors and to include confirmation results.

### Receipt

The samples were received on 1/16/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.3° C.

### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Detection Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

### Client Sample ID: LT-C-024 (2-4)

### Lab Sample ID: 480-74300-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	93.9		5.7	0.28	mg/Kg	1	☼	6010C	Total/NA
Lead - RE	72.3		5.6	0.27	mg/Kg	1	☼	6010C	Total/NA

### Client Sample ID: CC-C-023 (6-8)

### Lab Sample ID: 480-74300-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	267		5.9	0.28	mg/Kg	1	☼	6010C	Total/NA
Lead - RE	265		5.7	0.27	mg/Kg	1	☼	6010C	Total/NA

### Client Sample ID: CC-C-029 (8-10)

### Lab Sample ID: 480-74300-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	239		6.4	0.31	mg/Kg	1	☼	6010C	Total/NA
Lead - RE	416		6.2	0.30	mg/Kg	1	☼	6010C	Total/NA

### Client Sample ID: CC-C-030 (8)

### Lab Sample ID: 480-74300-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1780		5.7	0.27	mg/Kg	1	☼	6010C	Total/NA
Lead - RE	8620		6.2	0.30	mg/Kg	1	☼	6010C	Total/NA
Lead	68.9		0.010	0.0030	mg/L	1		6010C	TCLP

### Client Sample ID: CC-C-030 (10)

### Lab Sample ID: 480-74300-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	51.9		12.2	0.49	mg/Kg	1	☼	6010C	Total/NA
Lead	13900		30.5	1.5	mg/Kg	5	☼	6010C	Total/NA
Arsenic - RE	67.8		11.9	0.48	mg/Kg	1	☼	6010C	Total/NA
Lead - RE	19900		29.8	1.4	mg/Kg	5	☼	6010C	Total/NA
Lead	51.4		0.010	0.0030	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Client Sample ID: LT-C-024 (2-4)**

**Lab Sample ID: 480-74300-1**

**Date Collected: 01/15/15 15:40**

**Matrix: Solid**

**Date Received: 01/16/15 09:00**

**Percent Solids: 86.9**

**Method: 6010C - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	93.9		5.7	0.28	mg/Kg	☼	01/16/15 07:20	01/19/15 14:15	1

**Method: 6010C - Metals (ICP) - RE**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	72.3		5.6	0.27	mg/Kg	☼	01/20/15 14:26	01/21/15 17:40	1

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Client Sample ID: CC-C-023 (6-8)**

**Lab Sample ID: 480-74300-2**

**Date Collected: 01/15/15 09:05**

**Matrix: Solid**

**Date Received: 01/16/15 09:00**

**Percent Solids: 83.4**

**Method: 6010C - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	267		5.9	0.28	mg/Kg	☼	01/16/15 07:20	01/19/15 14:18	1

**Method: 6010C - Metals (ICP) - RE**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	265		5.7	0.27	mg/Kg	☼	01/20/15 14:26	01/21/15 17:43	1

## Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Client Sample ID: CC-C-029 (8-10)**

**Lab Sample ID: 480-74300-4**

**Date Collected: 01/15/15 10:05**

**Matrix: Solid**

**Date Received: 01/16/15 09:00**

**Percent Solids: 76.0**

**Method: 6010C - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	239		6.4	0.31	mg/Kg	☼	01/16/15 07:20	01/19/15 14:31	1

**Method: 6010C - Metals (ICP) - RE**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	416		6.2	0.30	mg/Kg	☼	01/20/15 14:26	01/21/15 17:56	1

# Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Client Sample ID: CC-C-030 (8)**

**Lab Sample ID: 480-74300-5**

**Date Collected: 01/15/15 11:25**

**Matrix: Solid**

**Date Received: 01/16/15 09:00**

**Percent Solids: 83.4**

## Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1780		5.7	0.27	mg/Kg	☼	01/16/15 07:20	01/19/15 14:42	1

## Method: 6010C - Metals (ICP) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8620		6.2	0.30	mg/Kg	☼	01/20/15 14:26	01/21/15 18:07	1

## Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	68.9		0.010	0.0030	mg/L	—	01/29/15 07:40	01/29/15 13:50	1

# Client Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Client Sample ID: CC-C-030 (10)**

**Lab Sample ID: 480-74300-6**

**Date Collected: 01/15/15 11:30**

**Matrix: Solid**

**Date Received: 01/16/15 09:00**

**Percent Solids: 79.0**

## Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	51.9		12.2	0.49	mg/Kg	☼	01/16/15 07:20	01/19/15 14:45	1
Lead	13900		30.5	1.5	mg/Kg	☼	01/16/15 07:20	01/19/15 15:05	5

## Method: 6010C - Metals (ICP) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	67.8		11.9	0.48	mg/Kg	☼	01/20/15 14:26	01/21/15 18:10	1
Lead	19900		29.8	1.4	mg/Kg	☼	01/20/15 14:26	01/22/15 09:57	5

## Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	51.4		0.010	0.0030	mg/L	—	01/29/15 07:40	01/29/15 13:53	1

# QC Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-223306/1-A

Matrix: Solid

Analysis Batch: 223527

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223306

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	10.3	U	10.3	0.41	mg/Kg		01/16/15 07:20	01/19/15 14:10	1
Lead	5.1	U	5.1	0.25	mg/Kg		01/16/15 07:20	01/19/15 14:10	1

Lab Sample ID: LCSSRM 480-223306/2-A

Matrix: Solid

Analysis Batch: 223527

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223306

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	153	131.0		mg/Kg		85.6	70.9 - 129.8
Lead	258	235.1		mg/Kg		91.3	75.6 - 124.8

Lab Sample ID: 480-74300-2 MS

Matrix: Solid

Analysis Batch: 223527

Client Sample ID: CC-C-023 (6-8)

Prep Type: Total/NA

Prep Batch: 223306

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	12.1		46.1	49.95		mg/Kg	☼	82	75 - 125
Lead	267		46.1	281.3	4	mg/Kg	☼	30	75 - 125

Lab Sample ID: 480-74300-2 MSD

Matrix: Solid

Analysis Batch: 223527

Client Sample ID: CC-C-023 (6-8)

Prep Type: Total/NA

Prep Batch: 223306

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	12.1		46.3	49.94		mg/Kg	☼	82	75 - 125	0	20
Lead	267		46.3	394.1	4 F2	mg/Kg	☼	274	75 - 125	33	20

Lab Sample ID: MB 480-223666/1-A

Matrix: Solid

Analysis Batch: 223960

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223666

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	10.0	U	10.0	0.40	mg/Kg		01/20/15 14:26	01/21/15 17:35	1
Lead	5.0	U	5.0	0.24	mg/Kg		01/20/15 14:26	01/21/15 17:35	1

Lab Sample ID: LCSSRM 480-223666/2-A

Matrix: Solid

Analysis Batch: 223960

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223666

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	152	143.7		mg/Kg		94.3	70.9 - 129.8
Lead	257	258.8		mg/Kg		100.9	75.6 - 124.8

TestAmerica Buffalo

# QC Sample Results

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

## Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-74300-2 MS

Matrix: Solid

Analysis Batch: 223960

Client Sample ID: CC-C-023 (6-8)

Prep Type: Total/NA

Prep Batch: 223666

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	15.0		47.1	52.90		mg/Kg	☼	80	75 - 125
Lead	265		47.1	263.3	4	mg/Kg	☼	-3	75 - 125

Lab Sample ID: 480-74300-2 MSD

Matrix: Solid

Analysis Batch: 223960

Client Sample ID: CC-C-023 (6-8)

Prep Type: Total/NA

Prep Batch: 223666

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	15.0		46.5	51.28		mg/Kg	☼	78	75 - 125	3	20
Lead	265		46.5	285.3	4	mg/Kg	☼	44	75 - 125	8	20

Lab Sample ID: MB 480-224829/2-A

Matrix: Solid

Analysis Batch: 225052

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 224829

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.010	U	0.010	0.0030	mg/L		01/29/15 07:40	01/29/15 13:42	1

Lab Sample ID: LCS 480-224829/3-A

Matrix: Solid

Analysis Batch: 225052

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 224829

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.976		mg/L		98	80 - 120

Lab Sample ID: LCSD 480-224829/4-A

Matrix: Solid

Analysis Batch: 225052

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 224829

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	1.00	0.965		mg/L		97	80 - 120	1	20

Lab Sample ID: LB 480-224354/1-F

Matrix: Solid

Analysis Batch: 225052

Client Sample ID: Method Blank

Prep Type: TCLP

Prep Batch: 224829

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.010	U	0.010	0.0030	mg/L		01/29/15 07:40	01/29/15 13:39	1

TestAmerica Buffalo

# QC Association Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

## Metals

### Prep Batch: 223306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-1	LT-C-024 (2-4)	Total/NA	Solid	3050B	
480-74300-2	CC-C-023 (6-8)	Total/NA	Solid	3050B	
480-74300-2 MS	CC-C-023 (6-8)	Total/NA	Solid	3050B	
480-74300-2 MSD	CC-C-023 (6-8)	Total/NA	Solid	3050B	
480-74300-4	CC-C-029 (8-10)	Total/NA	Solid	3050B	
480-74300-5	CC-C-030 (8)	Total/NA	Solid	3050B	
480-74300-6	CC-C-030 (10)	Total/NA	Solid	3050B	
LCSSRM 480-223306/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-223306/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 223527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-1	LT-C-024 (2-4)	Total/NA	Solid	6010C	223306
480-74300-2	CC-C-023 (6-8)	Total/NA	Solid	6010C	223306
480-74300-2 MS	CC-C-023 (6-8)	Total/NA	Solid	6010C	223306
480-74300-2 MSD	CC-C-023 (6-8)	Total/NA	Solid	6010C	223306
480-74300-4	CC-C-029 (8-10)	Total/NA	Solid	6010C	223306
480-74300-5	CC-C-030 (8)	Total/NA	Solid	6010C	223306
480-74300-6	CC-C-030 (10)	Total/NA	Solid	6010C	223306
480-74300-6	CC-C-030 (10)	Total/NA	Solid	6010C	223306
LCSSRM 480-223306/2-A	Lab Control Sample	Total/NA	Solid	6010C	223306
MB 480-223306/1-A	Method Blank	Total/NA	Solid	6010C	223306

### Prep Batch: 223666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-1 - RE	LT-C-024 (2-4)	Total/NA	Solid	3050B	
480-74300-2 - RE	CC-C-023 (6-8)	Total/NA	Solid	3050B	
480-74300-2 MS	CC-C-023 (6-8)	Total/NA	Solid	3050B	
480-74300-2 MSD	CC-C-023 (6-8)	Total/NA	Solid	3050B	
480-74300-4 - RE	CC-C-029 (8-10)	Total/NA	Solid	3050B	
480-74300-5 - RE	CC-C-030 (8)	Total/NA	Solid	3050B	
480-74300-6 - RE	CC-C-030 (10)	Total/NA	Solid	3050B	
LCSSRM 480-223666/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-223666/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 223960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-1 - RE	LT-C-024 (2-4)	Total/NA	Solid	6010C	223666
480-74300-2 - RE	CC-C-023 (6-8)	Total/NA	Solid	6010C	223666
480-74300-2 MS	CC-C-023 (6-8)	Total/NA	Solid	6010C	223666
480-74300-2 MSD	CC-C-023 (6-8)	Total/NA	Solid	6010C	223666
480-74300-4 - RE	CC-C-029 (8-10)	Total/NA	Solid	6010C	223666
480-74300-5 - RE	CC-C-030 (8)	Total/NA	Solid	6010C	223666
480-74300-6 - RE	CC-C-030 (10)	Total/NA	Solid	6010C	223666
LCSSRM 480-223666/2-A	Lab Control Sample	Total/NA	Solid	6010C	223666
MB 480-223666/1-A	Method Blank	Total/NA	Solid	6010C	223666

### Analysis Batch: 224044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-6 - RE	CC-C-030 (10)	Total/NA	Solid	6010C	223666

TestAmerica Buffalo

## QC Association Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

### Metals (Continued)

#### Leach Batch: 224354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-5	CC-C-030 (8)	TCLP	Solid	1311	
480-74300-6	CC-C-030 (10)	TCLP	Solid	1311	
LB 480-224354/1-F	Method Blank	TCLP	Solid	1311	

#### Prep Batch: 224829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-5	CC-C-030 (8)	TCLP	Solid	3010A	224354
480-74300-6	CC-C-030 (10)	TCLP	Solid	3010A	224354
LB 480-224354/1-F	Method Blank	TCLP	Solid	3010A	224354
LCS 480-224829/3-A	Lab Control Sample	Total/NA	Solid	3010A	
LCSD 480-224829/4-A	Lab Control Sample Dup	Total/NA	Solid	3010A	
MB 480-224829/2-A	Method Blank	Total/NA	Solid	3010A	

#### Analysis Batch: 225052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-5	CC-C-030 (8)	TCLP	Solid	6010C	224829
480-74300-6	CC-C-030 (10)	TCLP	Solid	6010C	224829
LB 480-224354/1-F	Method Blank	TCLP	Solid	6010C	224829
LCS 480-224829/3-A	Lab Control Sample	Total/NA	Solid	6010C	224829
LCSD 480-224829/4-A	Lab Control Sample Dup	Total/NA	Solid	6010C	224829
MB 480-224829/2-A	Method Blank	Total/NA	Solid	6010C	224829

### General Chemistry

#### Analysis Batch: 223327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-74300-1	LT-C-024 (2-4)	Total/NA	Solid	Moisture	
480-74300-2	CC-C-023 (6-8)	Total/NA	Solid	Moisture	
480-74300-4	CC-C-029 (8-10)	Total/NA	Solid	Moisture	
480-74300-5	CC-C-030 (8)	Total/NA	Solid	Moisture	
480-74300-6	CC-C-030 (10)	Total/NA	Solid	Moisture	

# Lab Chronicle

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

## Client Sample ID: LT-C-024 (2-4)

Date Collected: 01/15/15 15:40

Date Received: 01/16/15 09:00

## Lab Sample ID: 480-74300-1

Matrix: Solid

Percent Solids: 86.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			223306	01/16/15 07:20	EJT	TAL BUF
Total/NA	Analysis	6010C		1	223527	01/19/15 14:15	SLB	TAL BUF
Total/NA	Prep	3050B	RE		223666	01/20/15 14:26	EJT	TAL BUF
Total/NA	Analysis	6010C	RE	1	223960	01/21/15 17:40	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	223327	01/16/15 20:50	CMK	TAL BUF

## Client Sample ID: CC-C-023 (6-8)

Date Collected: 01/15/15 09:05

Date Received: 01/16/15 09:00

## Lab Sample ID: 480-74300-2

Matrix: Solid

Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			223306	01/16/15 07:20	EJT	TAL BUF
Total/NA	Analysis	6010C		1	223527	01/19/15 14:18	SLB	TAL BUF
Total/NA	Prep	3050B	RE		223666	01/20/15 14:26	EJT	TAL BUF
Total/NA	Analysis	6010C	RE	1	223960	01/21/15 17:43	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	223327	01/16/15 20:50	CMK	TAL BUF

## Client Sample ID: CC-C-029 (8-10)

Date Collected: 01/15/15 10:05

Date Received: 01/16/15 09:00

## Lab Sample ID: 480-74300-4

Matrix: Solid

Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			223306	01/16/15 07:20	EJT	TAL BUF
Total/NA	Analysis	6010C		1	223527	01/19/15 14:31	SLB	TAL BUF
Total/NA	Prep	3050B	RE		223666	01/20/15 14:26	EJT	TAL BUF
Total/NA	Analysis	6010C	RE	1	223960	01/21/15 17:56	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	223327	01/16/15 20:50	CMK	TAL BUF

## Client Sample ID: CC-C-030 (8)

Date Collected: 01/15/15 11:25

Date Received: 01/16/15 09:00

## Lab Sample ID: 480-74300-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			224354	01/26/15 08:30	TRG	TAL BUF
TCLP	Prep	3010A			224829	01/29/15 07:40	TAS	TAL BUF
TCLP	Analysis	6010C		1	225052	01/29/15 13:50	AMH	TAL BUF
Total/NA	Prep	3050B			223306	01/16/15 07:20	EJT	TAL BUF
Total/NA	Analysis	6010C		1	223527	01/19/15 14:42	SLB	TAL BUF
Total/NA	Prep	3050B	RE		223666	01/20/15 14:26	EJT	TAL BUF
Total/NA	Analysis	6010C	RE	1	223960	01/21/15 18:07	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	223327	01/16/15 20:50	CMK	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

**Client Sample ID: CC-C-030 (10)**

**Lab Sample ID: 480-74300-6**

**Date Collected: 01/15/15 11:30**

**Matrix: Solid**

**Date Received: 01/16/15 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			224354	01/26/15 08:30	TRG	TAL BUF
TCLP	Prep	3010A			224829	01/29/15 07:40	TAS	TAL BUF
TCLP	Analysis	6010C		1	225052	01/29/15 13:53	AMH	TAL BUF
Total/NA	Prep	3050B	RE		223666	01/20/15 14:26	EJT	TAL BUF
Total/NA	Analysis	6010C	RE	5	224044	01/22/15 09:57	AMH	TAL BUF
Total/NA	Prep	3050B			223306	01/16/15 07:20	EJT	TAL BUF
Total/NA	Analysis	6010C		1	223527	01/19/15 14:45	SLB	TAL BUF
Total/NA	Prep	3050B			223306	01/16/15 07:20	EJT	TAL BUF
Total/NA	Analysis	6010C		5	223527	01/19/15 15:05	SLB	TAL BUF
Total/NA	Prep	3050B	RE		223666	01/20/15 14:26	EJT	TAL BUF
Total/NA	Analysis	6010C	RE	1	223960	01/21/15 18:10	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	223327	01/16/15 20:50	CMK	TAL BUF

## Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Certification Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

### Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15 *

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

\* Certification renewal pending - certification considered valid.

TestAmerica Buffalo

## Method Summary

Client: Posillico Consulting  
Project/Site: Glen Isle: Data Gap Field Program

TestAmerica Job ID: 480-74300-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF

### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

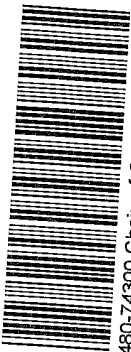
## Sample Summary

Client: Posillico Consulting

TestAmerica Job ID: 480-74300-1

Project/Site: Glen Isle: Data Gap Field Program

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-74300-1	LT-C-024 (2-4)	Solid	01/15/15 15:40	01/16/15 09:00
480-74300-2	CC-C-023 (6-8)	Solid	01/15/15 09:05	01/16/15 09:00
480-74300-4	CC-C-029 (8-10)	Solid	01/15/15 10:05	01/16/15 09:00
480-74300-5	CC-C-030 (8)	Solid	01/15/15 11:25	01/16/15 09:00
480-74300-6	CC-C-030 (10)	Solid	01/15/15 11:30	01/16/15 09:00



480-74300 Chain of Custody

777 New Durham Road  
Edison, New Jersey 08817  
Phone: (732) 549-3900 Fax: (732) 549-3679

# CHAIN OF CUSTODY / ANALYSIS REQUEST

Page 1 of 1

Name (for report and invoice) <b>Ellis Koch</b>		Samplers Name (Printed) <b>Amanda J. Racunello</b>		Site/Project Identification <b>Glen Isle Waterfront Redevelopment</b>		
Company <b>RXR - Glen Isle Partners, LLC</b>		P.O. #		State (Location of site): NJ: <input type="checkbox"/> NY: <input checked="" type="checkbox"/> Other: <input type="checkbox"/>		
Address <b>625 RXR Plaza</b>		Analysis Turnaround Time Standard <input type="checkbox"/> Rush Charges Authorized For: 2 Week <input type="checkbox"/> 24HR 1 Week <input type="checkbox"/> TAT. Other <input checked="" type="checkbox"/>		Regulatory Program:		
City <b>Uniondale</b>		State <b>N.Y.</b>				
Phone		Fax				
Sample Identification	Date	Time	Matrix	No. of Cont.	ANALYSIS REQUESTED (ENTER % BELOW TO INDICATE REQUEST)	LAB USE ONLY
LT-C-024 (2-4)	11/15/15	1340	Soil	2	Total Arsenic (6019) X Total Arsenic (6012) X Total Lead (6019) X Total Lead (6012) X	Project No:
CC-C-023 (6-8)	11/15/15	0905	Soil	2		Job No:
CC-C-028 (0-2)	11/15/15	0930	Soil	2		Sample Numbers
CC-C-029 (8-10)	11/15/15	1005	Soil	2		
CC-C-030 (8)	11/15/15	1125	Soil	2		
CC-C-030 (10)	11/15/15	1130	Soil	2		
(12)						
Preservation Used: 1 = ICE, 2 = HCl, 3 = H <sub>2</sub> SO <sub>4</sub> , 4 = HNO <sub>3</sub> , 5 = NaOH, 6 = Other, 7 = Water					Soil: X X X Water: X X X	

Special Instructions <b>* HOLD * Will Contact via email *</b>		Water Metals Filtered (Yes/No)?	
Relinquished by <b>Amanda J. Racunello</b>	Company <b>PNGC</b>	Date / Time <b>11/15/15 1150</b>	Received by <b>1A</b>
Relinquished by	Company	Date / Time	Received by <b>TAB</b>
2)		<b>11/15/15 0900</b>	Company
Relinquished by	Company	Date / Time	Received by
3)			Company
Relinquished by	Company	Date / Time	Received by
4)			Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).  
Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0814)

## Login Sample Receipt Checklist

Client: Posillico Consulting

Job Number: 480-74300-1

**Login Number: 74300**

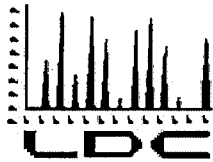
**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Janish, Carl M**

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	pwgc
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

## APPENDIX C



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Posillico Consulting  
1750 New Highway  
Farmingdale, NY 11735  
ATTN: Mr. Ellis Koch

February 11, 2015

SUBJECT: Glen Isle, Data Validation

Dear Mr. Koch,

Enclosed is the final validation report for the fraction listed below. This SDG was received on February 4, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #33666:**

<b><u>SDG #</u></b>	<b><u>Fraction</u></b>
480-74300-1	Metals

The data validation was performed under Category B guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA Region 2 Standard Operating Procedure for the Evaluation of Metals for the Contract Laboratory Program, SOP HW-2, Revision 13, September 2006
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist

**LDC #33666 (Posillico Consulting/RXR Glen Isle Partners / Glen Isle)**

33666ST.wpd

**Site:** Glen Isle  
**Laboratory:** Test America, Inc.  
**Report No.:** 480-74300-1  
**Reviewer:** Christina Rink/Laboratory Data Consultants for RXR Glen Isle Partners  
**Date:** February 10, 2015

**Samples Reviewed and Evaluation Summary**

FIELD ID	LAB ID	FRACTIONS VALIDATED
LT-C-024 (2-4)	480-74300-1	Lead
LT-C-024 (2-4)RE	480-74300-1RE	Lead
CC-C-023 (6-8)	480-74300-2	Lead
CC-C-023 (6-8)RE	480-74300-2RE	Lead
CC-C-029 (8-10)	480-74300-4	Lead
CC-C-029 (8-10)RE	480-74300-4RE	Lead
CC-C-030 (8)	480-74300-5	Lead
CC-C-030 (8)RE	480-74300-5RE	Lead
CC-C-030 (10)	480-74300-6	Arsenic and Lead
CC-C-030 (10)RE	480-74300-6RE	Arsenic and Lead
CC-C-030 (8) (TCLP)	480-74300-5(TCLP)	Lead
CC-C-030 (10) (TCLP)	480-74300-6(TCLP)	Lead
CC-C-023 (6-8)MS	480-74300-2MS	Lead
CC-C-023 (6-8)MSD	480-74300-2MSD	Lead
CC-C-023 (6-8)REMS	480-74300-2REMS	Arsenic and Lead
CC-C-023 (6-8)REMSD	480-74300-2REMSD	Arsenic and Lead

**Associated QC Samples(s):**

Field/Trip Blanks: None Associated

Field Duplicate pair: None Associated

The above-listed soil samples were collected on January 15, 2015 and were analyzed for arsenic and lead by SW-846 methods 6010C. The data validation was performed in accordance with the USEPA Region 2 *Standard Operating Procedure for the Evaluation of Metals for the Contract Laboratory Program*, SOP HW-2, Revision 13 (September 2006) and the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*, EPA 540-R-10-011 (January 2010), modified as necessary to accommodate the non-CLP methodologies used.

The inorganic data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness
- Holding Times and Sample Preservation
- Instrument Calibration
- Contract Required Quantitation Limit (CRQL) Standard Recoveries
- Blank Analysis Results
- Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results
- Matrix Spike (MS) Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Laboratory Control Sample (LCS)/Certified Reference Material (CRM) Results
- Serial Dilution Results
- Moisture Content
- Detection Limits Results
- Sample Quantitation Results

#### **Overall Evaluation of Data and Potential Usability Issues**

All results are usable as reported.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were not used as listed in the table below.

Sample	Analyte	Validation Action
LT-C-024 (2-4)RE CC-C-023 (6-8)RE CC-C-029 (8-10) CC-C-030 (8)	Lead	Do not use
CC-C-030 (10)	Arsenic Lead	Do not use Do not use

The validation findings were based on the following information.

#### **Data Completeness**

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

#### **Holding Times and Sample Preservation**

All criteria were met.

#### **Instrument Calibration**

All criteria were met.

### **CRQL Standard Recoveries**

All criteria were met.

### **Blank Results**

Analytes were detected below the reporting limits in the instrument blank samples. The following table summarizes the contamination and validation actions taken.

Blank ID	Analyte	Level Detected	Action Level	Associated Samples
ICB/CCB	Lead	0.00340 mg/L	RL	CC-C-030 (8) (TCLP) CC-C-030 (10) (TCLP)

Blank Actions for analytes detected below the reporting limit (RL).

If the sample result is < RL, report the result as nondetect (U) at the RL.

If the sample result is > RL or nondetect, no action is required.

Blank Actions for analytes detected above the RL.

If the sample result is < RL and < action level; report the result as nondetect (U) at the RL.

If the sample result is > RL and < action level; report the result as nondetect (U) at the reported value.

If the sample result is > action level or nondetect, no action is required.

No samples were qualified since the associated sample results were greater than the reporting limit.

No field blanks were identified in this SDG.

### **ICP ICS Results**

All analytes were within control limits in the ICSA and ICSAB analyses.

### **MS/MSD Results**

The laboratory performed MS and MSD analyses on samples CC-C-023 (6-8) and CC-C-023 (6-8)RE for arsenic and lead. All criteria were met.

### **Laboratory Duplicate Results**

Laboratory duplicates were not associated with this sample set. Validation action was not required on this basis.

### **Field Duplicate Results**

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

### **LCS/CRM Results**

All criteria were met.

### **Serial Dilution Results**

A serial dilution analysis was performed on samples CC-C-023 (6-8) and CC-C-023 (6-8)RE for arsenic and lead. All criteria were met.

### **Moisture Content**

All criteria were met.

### **Detection Limits Results**

No results were reported below the reporting limit (RL).

Due to high target analyte levels, select samples were analyzed at dilutions. The following table lists the sample dilutions which were performed and the results reported. RLs were elevated accordingly.

<b>Sample</b>	<b>Metal Analysis Reported</b>
CC-C-030 (10) CC-C-030 (8)RE	5-fold dilution due to high analyte level for Lead

In the case where more than one result was reported for an individual sample, the least technically acceptable results were not used as listed in the table below.

<b>Sample</b>	<b>Analyte</b>	<b>Validation Action</b>
LT-C-024 (2-4)RE CC-C-023 (6-8)RE CC-C-029 (8-10) CC-C-030 (8)	Lead	Do not use
CC-C-030 (10)	Arsenic Lead	Do not use Do not use

### **Sample Quantitation Results**

Calculations were spot-checked; no discrepancies were noted.

## DATA VALIDATION QUALIFIERS

- U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.
- J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.
- UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.
- R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 33666A4b

**VALIDATION COMPLETENESS WORKSHEET**

Date: 2/5/15

SDG #: 480-74300-1

Cat B

Page: 1 of 1

Laboratory: Test America, Inc.

Reviewer: *CA*2nd Reviewer: *CA*METHOD: Lead (EPA SW 846 Method 6010B) *C*

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Instrument Calibration	A	
III.	ICP Interference Check Sample (ICS) Analysis	A	
IV.	Laboratory Blanks	SW	
V.	Field Blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW <sup>a</sup> A	MS/D (13/14, 15/16 > 4x Pb)
VII.	Duplicate sample analysis	N	
VIII.	ICP Serial Dilution	A	
IX.	Laboratory control samples	A/A	LCS/D, SRM
X.	Field Duplicates	N	
XI.	Sample Result Verification	A	all > RL
XII.	Overall Assessment of Data	SW	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	LT-C-024 (2-4)	480-74300-1	Soil	01/15/15
2	LT-C-024 (2-4)RE	480-74300-1RE	Soil	01/15/15
3	CC-C-023 (6-8)	480-74300-2	Soil	01/15/15
4	CC-C-023 (6-8)RE	480-74300-2RE	Soil	01/15/15
5	CC-C-029 (8-10)	480-74300-4	Soil	01/15/15
6	CC-C-029 (8-10)RE	480-74300-4RE	Soil	01/15/15
7	CC-C-030 (8)	480-74300-5	Soil	01/15/15
8	CC-C-030 (8)RE	480-74300-5RE	Soil	01/15/15
9	CC-C-030 (10) Pb@Sn - high analyte	480-74300-6	Soil	01/15/15
10	CC-C-030 (10)RE Pb@Sn - high analyte	480-74300-6RE	Soil	01/15/15
11	CC-C-030 (8) (TCLP)	480-74300-5(TCLP)	Soil	01/15/15
12	CC-C-030 (10) (TCLP)	480-74300-6(TCLP)	Soil	01/15/15
13	CC-C-023 (6-8)MS	480-74300-2MS	Soil	01/15/15
14	CC-C-023 (6-8)MSD	480-74300-2MSD	Soil	01/15/15
15	CC-C-023 (6-8)REMS	480-74300-2REMS	Soil	01/15/15
16	CC-C-023 (6-8)REMSD	480-74300-2REMSD	Soil	01/15/15
17				

LDC #:

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1  
Reviewer: CR  
2nd reviewer: SM

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

LDC #: 33666A4b

**VALIDATION FINDINGS WORKSHEET**  
**PB/ICB/CCB QUALIFIED SAMPLES**

Page: 1 of 1  
 Reviewer: OL  
 2nd Reviewer: SM

**METHOD:** Trace metals (EPA SW 864 Method 6010B/6020/7000)

Soil preparation factor applied: \_\_\_\_\_

Sample Concentration units, unless otherwise noted: \_\_\_\_\_ mg/L

Associated Samples: 11, 12

				Sample Identification										
Analyte	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level	No Qualifiers (>RL)										
Pb		0.00340	RL											

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 33666 A41

## VALIDATION FINDINGS WORKSHEET

### Overall Assessment of Data

Page: 1 of 1

Reviewer:                     

2nd Reviewer:                     

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y)N N/A Was the overall quality and usability of the data acceptable?

[illegible]

Comments: \_\_\_\_\_

\_\_\_\_\_

LDC #: 33666A46

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 6 of 1  
Reviewer: OR  
2nd Reviewer: SM

**METHOD:** Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV <u>6/19/15</u> <u>08:39</u>	ICP (Initial calibration)	As	0.3485	0.375	100	100	Y
	ICP/MS (Initial calibration)						
	CVAA (Initial calibration)						
CCV <u>6/19/15</u> <u>14:34</u>	ICP (Continuing calibration)	Pb	0.52530	0.500	105	105	Y
	ICP/MS (Continuing calibration)						
	CVAA (Continuing calibration)						

Comments:

LDC #: 3366A4

# **VALIDATION FINDINGS WORKSHEET** **Level IV Recalculation Worksheet**

Page: 1 of 1  
 Reviewer: ac  
 2nd Reviewer: sm

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
 True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
 D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)  
 SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units) mg/kg	True / D / SDR (units) mg/kg	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
ICSPB 1/19/15 (08:53)	ICP interference check	As	0.10304 mg/L	0.1 mg/L	103	103	Y
SRM	Laboratory control sample	Pb	235.097	153 or 258	91.1	85.6 or 91.3	Y
13	Matrix spike	As	(SSR-SR) 37.6208	46.1	82	82	Y
13/14	Duplicate	Pb	271.6916	391.8562	33	33	Y
4	ICP serial dilution	Pb	265.0772	289.238	10	10	Y

263.0758

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

LDC #: 33666A45

# **VALIDATION FINDINGS WORKSHEET** **Sample Calculation Verification**

Page: 1 of 1Reviewer: OR2nd reviewer: SM**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?  
 Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?  
 Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 5 were recalculated and verified using the following equation:
$$\text{Concentration} = \frac{(\text{RD})(\text{FV})(\text{Dil})}{(\text{In. Vol.})}$$

Recalculation:

$$\frac{1,8743 \text{ mg/L} (50) (1)}{0.5163 (0.76)} = 538.8 \text{ mg/L}$$

RD = Raw data concentration  
 FV = Final volume (ml)  
 In. Vol. = Initial volume (ml) or weight (G)  
 Dil = Dilution factor

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	1	Pb	93.9	93.94.0	Y
	2 RE		72.3	72.3	
2	3		267	267	
	4 RE		265	263	
4	5		239	239	
	6 RE		416	416	
5	7		1780	1780	
	8 RE		8620	8620	
6	9	As	68.951.9	51.9	
		As Pb	13900	13900	
	10 RE	Pb As	67.8	67.8	
		As Pb	19900	19900	
5	11 RE	Pb	68.9 mg/L	68.9 mg/L	
6	12 RE	↓	51.4 mg/L	51.4 mg/L	↓

Note: \_\_\_\_\_

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YES    NO    N/A

A.1.1 Contract Compliance Screening Report

Present?

☐    ☐    ☒

ACTION:    If no, contact RSCC/PO.

A.1.2 Record of Communication (from RSCC)

Present?

☐    ☐    ☒

ACTION:    If no, request from the RSCC.

A.1.3 Sampling Trip Report

Present and complete?

☐    ☐    ☒

ACTION:    If no, contact RSCC/PO.

A.1.4 Chain of Custody/Sample Traffic Report

Present?

☒    ☐    ☐

Legible?

☒    ☐    ☐

Signature of sample custodian  
present?

☒    ☐    ☐

ACTION: If no, contact RSCC/WAM/PO.

A.1.5 Cover Page

Present?

☒    ☐    ☐

Is the Cover Page properly filled in  
and the verbatim signed by the lab  
manager or the manager's designee?

☒    ☐    ☐

Do the sample identification numbers  
on the Cover Page agree with sample  
Identification numbers on:

(a) Traffic Report Sheet?

☐    ☐    ☒

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
(b) Form I's?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is the number of samples on the Cover  
Page the same as the number of  
samples on the Traffic Report sheet  
and the Regional Record of Communication  
(ROC) for the data Case?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

**ACTION:**

If no for any of the above, prepare  
Telephone Record Log and contact RSCC/PO  
for re-submittal of the corrected Cover Page  
from the laboratory.

**A.1.6 SDG Narrative, DC-1 & DC-2 Form**

Is the SDG Narrative present?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Is Sample Log-In Sheet(Form DC-1)  
present and complete?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Is Complete SDG Inventory Sheet(Form DC-2)  
present and complete?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

**ACTION:**

If no, write in the Contract-Problems/  
Non-Compliance Section of the Data Review  
Narrative.

**A.1.7 Form I to XV**

**A.1.7.1**    Are all the Form I through Form XV  
labeled with:

Laboratory Name?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Laboratory Code?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

RAS/Non-RAS Case No.?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

SDG No.?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

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YES      NO      N/A

Contract No.?

☐      ☐      ☒

**ACTION:**

If no for any of the above, note under Contract Problem/Non-Compliance Section of the "Data Review Narrative" and contact PO for corrected Form(s) from the laboratory.

A.1.7.2

After comparing values on Forms I-IX against the raw data, do any computation/transcription errors exceed 10% of the reported values on the Forms for:

(a) all analytes analyzed by ICP-AES?

☐      ☒      ☐

(b) all analytes analyzed by ICP-MS?

☐      ☐      ☒

(c) Mercury?

☐      ☐      ☒

(d) Cyanide?

☐      ☐      ☒

**ACTION:**

If yes, prepare Telephone Record Log and contact CLP PO/TOPO for the corrected data from the laboratory.

**A.1.8 Raw Data**

Data shall not be validated without the hard/electronic copies of the associated raw data for samples and QC samples.

**A.1.8.1      Digestion/Distillation Log**

Digestion Log for ICP-AES  
(Form XII) present?

☒      ☐      ☐

Digestion Log for ICP-MS  
(Form XII) present?

☐      ☐      ☒

Digestion Log for mercury  
(Form XII) present?

☐      ☐      ☒

Distillation Log for cyanide  
(Form XII) present?

☐      ☐      ☒

Are pH values for metals and

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YES    NO    N/A

cyanide reported for each  
aqueous sample?

☐ — ☒

Are percent solids calculations  
present for soils/sediments?

☒ — —

Are preparation dates present on the  
sample preparation logs/bench sheets?

☒ — —

NOTE:

Digestion/Distillation log must include weights, volumes,  
and dilutions used to obtain the reported results.

A.1.8.2    Is the analytical instrument  
real-time    printouts present for:

ICP-AES?

☒ — —

ICP-MS?

☐ — ☒

Mercury?

☐ — ☒

Cyanide?

☐ — ☒

Are all laboratory bench sheets  
and instrument raw data printouts  
necessary to support all sample  
analyses and QC operations:

Legible?

☒ — —

Properly labeled?

☒ — —

Are all field samples, QC samples  
and field QC samples present on:

Digestion/Distillation log?

☒ — —

Instrument Printouts?

☒ — —

ACTION:

If no for any of the above questions in  
Section A.1.8.1 and Section A.1.8.2, write  
Telephone Record Log and contact TOPO/PO  
for re-submittal from the laboratory.

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YES    NO    N/A

**A.1.9 Technical Holding Times: (Aqueous and soil samples)**

(Examine sample Traffic Reports and digestion/distillation logs to determine the holding time from the sample collection date to the sample preparation date.)

A.1.9.1      Cyanide distillation(14 days)exceeded?      ☐ ☒

Mercury analysis(28 days) exceeded?      ☐ ☒

Other Metals analysis(180 days)exceeded?      ☒ ☐

**ACTION:**

If yes, reject (R) and red-line non-detects and flag as estimated (J)results  $\geq$  MDL even if sample(s) was preserved properly.

**NOTE:**

In addition to qualifying the data, a list of all samples and analytes which exceeded the holding times must be prepared. Report for each sample the number of days that were exceeded. (Subtract the sample collection date from the sample preparation date). Attach this list to the data review narrative.

A.1.9.2      Is pH of aqueous samples for:

Metals Analysis     $\leq 2$ ?      ☐ ☒

Cyanide Analysis     $\geq 12$ ?      ☐ ☒

**ACTION:**

If no for any of the above, flag non-detects as "R" and detects as "J".

A.1.9.3    Is the cooler temperature  $\leq 10$  C°?      ☒ ☐

**ACTION:**

If cooler temperature is  $>10^{\circ}\text{C}$  , flag non-detects as "UJ" and detects as "J".

**A.1.10 Final Data Correctness - Form I**

A.1.10.1      Are Form I's for all samples

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YES	NO	N/A
-----	----	-----

present and complete?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

ACTION:

If no, prepare Telephone Record  
Log and contact CLP PO/TOPO for  
submittal from the laboratory.

- A.1.10.2 Verify there are no calculation and transcription errors in the results reported on Form I's. Circle on each Form I all results that are incorrect.

Is the calculation error less than 10% of the correct result?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Are results on Form I's reported in correct units (ug/L for aqueous and MG/KG for soils)?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Are results on Form I'S reported by correct significant figures?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Are soil sample results on Form I's corrected for percent solids?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Are all "less than MDL" values reported by the CRQLs and coded with "U"?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Are values less than the CRQLs but greater than or equal to the MDLs flagged with "J"?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Are appropriate contractual quality control and Method qualifiers used?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

ACTION:

If no for any of the above questions,  
prepare Telephone Record Log, and contact  
CLP PO/TOPO for corrected data.

- A.1.10.3 Do EPA sample identification numbers and the corresponding laboratory sample identification numbers match on the Cover Page, Form I's and in the raw data?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Was a brief physical description

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of the samples before and after  
digestion given on the Form I's?

YES      NO      N/A

[ ]      ☒      [ ]

Was any sample result outside the  
mercury/cyanide calibration range  
or the ICP-AES/ICP-MS linear range  
diluted and noted on the Form I?

[ ☒ ]      [ ]      [ ]

**ACTION:**

If no for any of the above, note under  
the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative.

**A.1.11 Initial Calibration**

A.1.11.1    Is a record of at least 2 point  
(A blank and a standard)calibration  
present for ICP-AES analysis?

[ ☒ ]      [ ]      [ ]

Is a record of at least 2 point  
(a blank and a standard)calibration  
present for ICP-MS analysis?

[ ]      [ ]      ☒

Is a record of at least 5 point calibration  
(a blank & 4 standards)present for Hg analysis?

[ ]      [ ]      ☒

Is a record of at least 4 point calibration  
(a blank & 4 standards)present for cyanide?

[ ]      [ ]      ☒

**ACTION:**

If incomplete or no initial calibration  
was performed, reject (R) and red-line  
the associated data (detects & non-detects).

Is one initial calibration standard  
at the CRQL level for cyanide and  
mercury?

[ ]      [ ]      ☒

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.11.2    Is the curve correlation  
coefficient  $\geq 0.995$  for:

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
Mercury Analysis?	[ ]	___	✓
Cyanide Analysis?	[ ]	___	✓
ICP-AES (more than 2 point Calib.)?	[✓]	___	___
ICP-MS (more than 2 point calib.)?	[ ]	___	✓

ACTION:

If no, qualify the associated sample results  $\geq$  MDL as estimated "J" and non-detects as "UJ".

NOTE:

The correlation coefficient shall be calculated by the data validator using standard concentrations and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.12    Initial and Continuing Calibration Verification- Form IIA

A.1.12.1    Present and complete for every metal and cyanide?	[✓]	___	___
Present and complete for ICP-AES and ICP-MS when both these methods were used for the same analyte?	[ ]	___	✓

ACTION:

If no for any of the above, prepare a Telephone Record Log and contact PO/TOPO for re-submittal from the laboratory.

A.1.12.2    Was a Continuing Calibration Verification performed every 10 samples or every 2 hours whichever is more frequent?	[✓]	___	___
---	-----	-----	-----

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.12.3    Was an ICV or a mid-range standard distilled and analyzed with each batch of cyanide samples?	[ ]	___	✓
---	-----	-----	---

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YES    NO    N/A

ACTION:

If no for any of the above, write  
in the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative and  
qualify results  $\geq$  MDL as estimated (J).

- A.1.12.2    Circle on each Form IIA all percent recoveries  
that are outside the contract windows.

Are ICV/CCVs within control limits for:

Metals - 90-110%R?

[ ☒ ]                    

Hg - 80-120%R?

[ ☐ ]              ☒

Cyanide - 85-115%R?

[ ☐ ]              ☒

ACTION:

If no, qualify all samples between a previous technically acceptable CCV  
standard and a subsequent technically acceptable CCV standard as  
follows as follows:

Qualify as estimated (J) all detects and non-detects,  
if the ICV/CCV %R is between 75-89%(65-79% for Hg; 70-84% for CN).  
Qualify only positive results( $\geq$  MDL) as "J" if the ICV/CCV %R is  
between 111-125%(121-135% for Hg; 116-130% for CN). Reject (R) and  
red-line only  
detects if the recovery is greater than 125% (135% for Hg; 130% for  
CN). Reject (R) and red-line all associated results (hits and non-  
detects) if the recovery is less than 75%(65% for Hg; 70% for CN).

NOTE:

For ICV that does not fall within the acceptance limits,  
qualify all samples reported from the analytical run.

- A.1.12.3    Was the distilled ICV or mid-range  
standard for cyanide within acceptance  
limits (85-115%)?

[ ☐ ]              ☒

ACTION:

If no, Qualify all cyanide results  $\geq$  MDL as "J".

A.1.13 CRQL Standard Analysis - Form IIB

- A.1.13.1    For each ICP-AES run, was a CRI

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(CRQL or MDL when MDL > CRQL)  
standard analyzed?

(Note: CRI is not required for Al, Ba,  
Ca, Fe, Mg, Na and K.)

YES      NO      N/A

☒      ☐      ☐

For each ICP-MS run, was a CRI  
(CRQL or MDL when MDL > CRQL) standard  
analyzed for each mass/isotope used  
for the analysis?

☐      ☐      ☒

For each mercury run, was a CRQL  
standard analyzed?

☐      ☐      ☒

For each cyanide run, was a CRQL  
standard analyzed?

☐      ☐      ☒

**ACTION:**

If no for any of the above, write  
this deficiency in the Contract Problems/  
Non-Compliance Section of the Data Review  
Narrative, inform CLP PO and flag results  
in the affected ranges (detects <2xCRQL) as J  
and non-detects UJ.

The affected ranges are:

ICP-AES Analysis - \*True Value  $\pm$  CRQL

ICP-MS Analysis - \*True Value  $\pm$  CRQL

Mercury Analysis - \*True Value  $\pm$  CRQL

Cyanide Analysis - \*True Value  $\pm$  CRQL

\* True value of the CRQL Standard

A.1.13.2 Was a CRQL standard analyzed after the  
ICV/ICB, before the final CCV/CCB and  
once every 20 analytical samples in  
the analytical run for each analysis?

☒      ☐      ☐

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the  
"Data Review Narrative".

A.1.13.3 Circle on each Form IIB all percent  
recoveries that are outside the  
acceptance windows.

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Is the CRQL standard within control limits for:

Metals(ICP-AES/ICP-MS)- 70 - 130%?

Mercury- 70 - 130%?

Cyanide - 70 - 130%?

YES      NO      N/A

☒

☐

☐

**ACTION:**

If no, flag detects <2xCRQL as "J" and non-detects as "UJ" if the CRQL standard recovery is between 50-69%. Flag(J) only detects <2xCRQL if the recovery is between 131% and ≤180%. If the recovery is less than 150%, reject(R) and red-line non-detects and detects < 2xCRQL, and flag (J) detects between 2xCRQL and ICV/CCV. Reject and red-line only detects <2xCRQL and flag (J) detects ≥ 2xCRQL but < ICV/CCV if the recovery is > 180%.

**NOTE:**

1. Qualify all field samples analyzed between a previous technically acceptable analysis of the CRQL standard and a subsequent acceptable analysis of the CRQL standard
2. Flag (J) or reject (R) only the final sample results on Form I's when Sample raw data are within the affected ranges and the CRQL standard is outside the acceptance windows.
3. The samples and the CRQL standard must be analyzed in the same analytical run.

**A.1.14 Initial and Continuing Calibration Blanks - Form III**

A.1.14.1      Present and complete for all the instruments used for the metals and cyanide analyses?

Was an initial Calibration Blank analyzed after ICV?

Was a continuing Calibration Blank analyzed after every CCV and every 10 samples or every 2 hours, whichever is more frequent?

Were the ICB & CCB values ≥ MDL but < CRQL reported on Form III and flagged "J" by

☒

☒

☒

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using MDLs from direct analysis(Preparation  
Method "NP1")?  
(Check Form III against the raw data)

<u>YES</u>	<u>NO</u>	<u>N/A</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ACTION:

If no, inform CLP PO/TOPO and make a note  
in the Contract-Problems/Non-Compliance  
Section of the "Data Review Narrative".

A.1.14.2    Circle with red pencil on each Form III  
all Calib. Blank values that are:

$\geq$  MDL but  $\leq$  CRQL

$>$  CRQL

A.1.14.2.1    When MDL < CRQL, is any Calib. Blank  
value  $\geq$  MDL but  $\leq$  CRQL?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

ACTION:

If yes, change sample results  $\geq$  MDL  
but  $\leq$  CRQL to the CRQL with a "U".  
Do not qualify non-detects.

A.1.14.2.2 When MDL < CRQL, is any Calib. Blank  
value  $>$  CRQL?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

ACTION:

If yes, reject (R) and red line the  
associated sample results  $>$  CRQL  
but  $<$  ICB/CCB Blank Result. Flag as "J"  
detects  $>$  ICB/CCB blank value but  
 $<$  10xICB/CCB value. Change the sample  
results  $\geq$  MDL but  $\leq$  the CRQL to CRQL  
with a "U".

A.1.14.2.3 Is any Calibration Blank value  
below the negative CRQL?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

ACTION:

If yes, flag (J) as estimated all  
associated sample results  $\geq$  CRQL but  
 $<$  10xCRQL.

NOTE:

1. For ICB that does not meet the technical  
QC Criteria, apply the action to all samples

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YES      NO      N/A

reported from the analytical run.

2. For CCBs that do not meet the technical QC criteria, apply the action to all samples analyzed between a previous technically acceptable analysis of CCB and a subsequent technically acceptable analysis of the CCB in the analytical run.,

A.1.15 Preparation Blank - FORM III

NOTE: The Preparation Blank for mercury is the same as the calibration blank.

## A.1.15.1 Was one Preparation Blank prepared with and analyzed for:

Each Sample Delivery Group (SDG)?

[☒, ]      \_\_\_\_\_      \_\_\_\_\_

Each batch of the SDG samples digested/distilled?

[☒, ]      \_\_\_\_\_      \_\_\_\_\_

Each matrix type?

[☒, ]      \_\_\_\_\_      \_\_\_\_\_

All instruments used for metals and cyanide analyses?

[☒, ]      \_\_\_\_\_      \_\_\_\_\_

ACTION:

If no for any of the above, flag as estimated (J) all the associated positive data <10xMDL for which the Preparation Blank was not analyzed.

NOTE:

If only one blank was analyzed for more than 20 samples, then the first 20 samples analyzed are not estimated (J), but all additional samples must be qualified (J).

## A.1.15.2 Circle with red pencil on each Form III all Prep. Blank values that are:

$\geq$  MDL but  $\leq$  CRQL, and

$>$  CRQL

A.1.15.2.1 When MDL < CRQL, is any preparation blank value  $\geq$  MDL but  $\leq$  CRQL?

\_\_\_\_\_ [☒, ] \_\_\_\_\_

ACTION:

If yes, change sample result  $\geq$  MDL

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YES    NO    N/A

but  $\leq$  CRQL to CRQL with a "U".

A.1.15.2.2 When the MDL  $\leq$  CRQL, is any Preparation Blank value greater than its CRQL?

\_\_\_    [ ]    ☒

If yes, is the Prep. Blank value greater than the value of the associated Field Blank collected and analyzed with the SDG samples?

\_\_\_    [ ]    ☒

If yes, is the lowest concentration of that analyte in the associated samples less than 10 times the Preparation Blank value?

\_\_\_    [ ]    ☒

ACTION:

If yes, reject (R) and red-line all associated sample results greater than the CRQL but less than the Prep.Blank value. Flag as "J" detects > Prep. Blank value but <10xPrep.Blank. If the sample result  $\geq$  MDL but  $\leq$  CRQL, replace it with CRQL-U.

If the Prep. Blank value is less than the same analyte value in the Field Blank, do not qualify the sample results due to the Prep. Blank criteria.

NOTE:

Convert soil sample result to mg/Kg on wet weight basis to compare with the soil Prep. Blank result on Form III.

A.1.15.2.3 Is the Prep. Blank concentration below the negative CRQL?

\_\_\_    ☒    \_\_\_

ACTION:

If yes, flag (J) all associated sample results less than 10xCRQL. Qualify non-detects as estimated (UJ).

A.1.15.2.4 When the MDL is greater than the CRQL, is the preparation blank concentration on Form III greater than two times the MDL?

\_\_\_    [ ]    ☒

ACTION:

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YES    NO    N/A

If yes, reject (R) and red-line all positive sample results with sample raw data less than 10 times the Preparation Blank value.

A.1.16    ICP-AES/ICP-MS Interference Check Sample (ICS) - Form IV

NOTE: Not required for CN, Hg, Al, Ca, Fe and Mg.

A.1.16.1    Present and complete?

[ ☒ ]    ☐    ☐

Was ICS analyzed at the beginning and end of each analytical run, and once for every 20 analytical samples?

[ ☐ ]    ☒    ☐

Was ICS analyzed at the beginning of the ICP-MS analytical run?

[ ☒ ]    ☐    ☐

ACTION:

If no, flag as estimated (J) all sample results.

A.1.16.2    ICP-AES Method

A.1.16.2.1    ICSA Solution:

For ICP-AES, are the ICSA "Found" analyte values within the control limits  $\pm$  of CRQL of the true/established mean value?

[ ☒ ]    ☐    ☐

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSA Solution on Form IV?

[ ☐ ]    ☐    ☒

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated only sample results  $\geq$ MDL

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YES      NO      N/A

for which the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag non-detects as "UJ" and detects as "J".

A.1.16.2.3 ICSAB Solution

For ICP-AES, are all analyte results in ICSAB within the control limits of 80-120 of the true/established mean value?

[☒]      ☐      ☐

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSAB Solution on Form IV?

[☐]      ☐      [☒]

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79%, qualify sample results  $\geq$  MDL as "J" and non-detects as "UJ". Reject (R) and red-line all sample results (detects & non-detects) for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only positive results.

A.1.16.3 ICP-MS Method

A.1.16.3.1 ICSA Solution:

For ICP-MS, are the ICSA "Found" analyte values within the control limits of  $\pm$ CRQL of the true/established mean value?

[☐]      ☐      [☒]

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated only sample results  $\geq$  MDL if the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag the associated sample detects as "J" and non-detects as "UJ".

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YES    NO    N/A

## A.1.16.3.3 ICSAB Solution

For ICP-MS, are all analyte results  
in ICSAB within the control limits of  
80-120% of the true/established mean  
value, whichever is greater?

[ ]

—

/

ACTION:

If no, apply the following action to all  
samples reported from the analytical run:

Flag (J) as estimated those associated  
sample results  $\geq$  MDL for which the ICSAB  
analyte recovery is greater than 120% but  
 $\leq$  150%. If the ICSAB recovery falls within  
50-79% flag (J) as estimated the associated  
sample results  $\geq$  MDL. Reject (R) and red-line  
those all sample detects and non-detects for  
which the ICSAB analyte recovery is less than  
50%. If the recovery is above 150%, reject (R)  
and red-line only detects ( $\geq$  MDL).

A.1.17 Spiked Sample Recovery: Pre-Digestion/Pre-Distillation)-Form V A  
Note: Not required for Ca, Mg, K, and Na (both matrices); Al and Fe (soil only)

## A.1.17.1 Was Matrix Spike analysis performed:

For each matrix type?

[ / ]

—

—

For each SDG?

[ / ]

—

—

On one of the SDG samples?

[ / ]

—

—

For each concentration range  
(i.e., low, med., high)?

[ / ]

—

—

For each analytical Method  
(ICP-AES, ICP-MS, Hg, CN) used?

[ / ]

—

—

Was a spiked sample prepared and  
analyzed with the SDG samples?

[ / ]

—

—

ACTION:

If no for any of the above, flag as  
estimated (J) all the positive data  
for which a spiked sample was not  
analyzed.

NOTE:

If more than one spiked sample were  
analyzed for one SDG, then qualify the  
associated data based on the worst spiked  
sample analysis.

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YES      NO      N/A

- A.1.17.2      Was a field blank or PE sample used  
for the spiked sample analysis?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag (J) as estimated positive data of the associated SDG samples for which field blank or PE sample was used for the spiked sample analysis.

- A.1.17.3      Circle on each Form VA all spike recoveries that are outside the control limits (75-125%) that have sample concentrations less than four times the added spike concentrations.

Are all recoveries within the control limits when sample concentrations are less than or equal to four times the spike concentrations?

☒ \_\_\_\_\_

NOTE:

Disregard the out of control spike recoveries for analytes whose concentrations are greater than or equal to four times the spike added.

Are results outside the control limits (75-125%) flagged with Lab Qualifier "N" on Form I's and Form VA?

☐ \_\_\_\_\_ ☒

ACTION:

If no for any of the above, write in the Contract - Problems/Non-Compliance Section of the Data Review Narrative.

- A.1.17.4      Aqueous

Are any spike recoveries:

(a) less than 30%?

\_\_\_\_\_ ☒ \_\_\_\_\_

(b) between 30-74%?

\_\_\_\_\_ ☒ \_\_\_\_\_

(c) between 126-150%?

\_\_\_\_\_ ☒ \_\_\_\_\_

(d) greater than 150%?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If the matrix spike recovery is less than 30%, reject (R) and red-line all associated aqueous data (detects & non-detects). If between 30-74%, qualify all associated aqueous data  $\geq$  MDL as "J" and non-detects

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YES    NO    N/A

as "UJ". If between 126-150%, flag (J)  
all data  $\geq$  MDL as "J". If greater than 150%,  
reject (R) and red-line all associated data  $\geq$  MDL.

(NOTE: Replace "N" with "J", "R" as appropriate.)

A.1.17.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	—	<input checked="" type="checkbox"/>	—
(b) between 10-74%?	—	<input checked="" type="checkbox"/>	—
(c) between 126-200%?	—	<input checked="" type="checkbox"/>	—
(d) greater than 200%?	—	<input checked="" type="checkbox"/>	—

ACTION:

If yes for any of the above, proceed  
as follows:

If the matrix spike recovery is less  
than 10%, reject (R) and red-line all  
associated data (detects & non-detects);  
if between 10-74%, qualify all associated  
data  $\geq$  MDL as "J" and non-detects as "UJ";  
if between 126-200%, flag (J) all associated  
data  $\geq$  MDL as "J" If greater than 200%, reject  
(R) and red-line all associated data  $\geq$  MDL.  
(NOTE: Replace "N" with "J" or "R" as appropriate.)

A.1.18 Lab Duplicates) - Form VI

(CMS/MSD)

A.1.18.1 Was the lab duplicate analysis performed:

For each SDG?	<input checked="" type="checkbox"/>	—	—
On one of the SDG samples?	<input checked="" type="checkbox"/>	—	—
For each matrix type?	<input checked="" type="checkbox"/>	—	—
For each concentration range (low or med.)?	<input checked="" type="checkbox"/>	—	—
For each analytical Method (ICP-AES/ICP-MS, Hg, CN) Used?	<input checked="" type="checkbox"/>	—	—
Was a lab duplicate prepared and analyzed with the SDG samples?	<input checked="" type="checkbox"/>	—	—

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YES      NO      N/A

ACTION:

If no for any of the above, flag (J) as estimated all the SDG sample results (detects & non-detects) for which the lab duplicate analysis was not performed.

NOTE:

If more than one lab duplicate sample were analyzed for an SDG, then qualify the associated samples based on the worst lab duplicate analysis.

- A.1.18.2 Was a Field Blank or PE sample used for the Lab Duplicate analysis?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag as estimated (J) all SDG sample results (hits & non-detects) for which Field Blank or PE sample was used for duplicate analysis.

- A.1.18.3 Circle on each Form VI all values that are:

RPD > 20%, or

Absolute Difference > CRQL

Are all values within control limits (RPD  $\leq$  <sup>35</sup>20% or absolute difference  $\leq$   $\pm$ CRQL)?

☒ \_\_\_\_\_

If no, are all results outside the control limits flagged with an "\*" (Lab Qualifier) on Form VI and on all Form I's?

☐ \_\_\_\_\_ ☒

ACTION:

If no, write in the Contract-Problems/ Non-Compliance Section of the Data Review Narrative.

NOTE:

The laboratory is not required to report on Form VI the RPD when both values are non-detects.

- A.1.18.4 Aqueous

- A.1.18.4.1 When sample and duplicate values are both  $\geq$  5xCRQL (substitute MDL for CRQL when MDL > CRQL),

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
is any RPD > 20% but < 100%?	—	[ ]	✓
is any RPD ≥ 100%?	—	[ ]	✓

ACTION:

If the RPD is > 20% but < 100%, flag (J) as estimated the associated sample data ≥ CRQL. If the RPD is ≥ 100%, reject (R) and red-line the associated sample data ≥ CRQL.

(NOTE: Replace "\*" with "J" or "R" as appropriate.)

A.1.18.4.2 When the sample and/or duplicate value < 5xCRQL (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate values:

> ± CRQL?	—	[ ]	✓
> ± 2xCRQL?	—	[ ]	✓

ACTION:

If the absolute difference is > CRQL, flag as estimated all the associated sample results ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the absolute difference is > 2xCRQL, reject (R) and red-line all the associated non-detects and detects ≥ MDL but < 5xCRQL.

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.
2. If one value is > CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this difference to qualify sample results.

A.1.18.5 Soil/Sediment

A.1.18.5.1 When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),

is any RPD ≥ 35% but < 120%?	—	[✓]	—
is any RPD ≥ 120%?	—	[✓]	—

ACTION:

If the RPD is ≥ 35% and < 120%, flag (J) as estimated the associated sample

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YES      NO      N/A

data  $\geq$  CRQL. If the RPD is  $\geq$  120%, reject (R) and red-line the associated sample data  $\geq$  CRQL.

A.1.18.5.2 When the sample and/or duplicate value  $< 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL  $>$  CRQL), is the absolute difference between sample and duplicate:

$> \pm 2 \times \text{CRQL}?$

—      [☒]      —

$> \pm 4 \times \text{CRQL}$

—      [☒]      —

ACTION:

If the absolute difference is  $> 2 \times \text{CRQL}$ , flag all the associated sample results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  as "J" and non-detects as "UJ". If the absolute difference is  $> 4 \times \text{CRQL}$ , reject (R) and red-line all the associated non-detects and detects  $\geq$  MDL but  $< 5 \times \text{CRQL}$ .

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is  $> \text{CRQL}$  and the other value is non-detect, calculate the absolute difference between the value  $> \text{CRQL}$  and the MDL, and use this difference to qualify sample results.

A.1.19      Field Duplicates

Aqueous Field Duplicates

A.1.19.1 Was an aqueous Field Duplicate pair collected and analyzed?  
(Check Sampling Trip Report)

[ ]      —      —

ACTION:

If yes, prepare a Form (Appendix A.4) for each aqueous Field Duplicate pair. Report the sample and Field Duplicate results on Appendix A.4 from their respective Form I's. Calculate and report RPD on Appendix A.4 when sample and its Field Duplicate values are both  $> 5 \times \text{CRQL}$ . Calculate and report the absolute difference on Appendix A.4 when at least one value (sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the aqueous Field Duplicate analysis in accordance with the

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YES    NO    N/A

QC criteria stated in Sections A.1.19.2 and A.1.19.3.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this the criteria to qualify the results.

A.1.19.2    Circle all values on the Form (Appendix A.4) for Field Duplicates that have:

RPD  $\geq$  20%    or

Difference  $> \pm$  CRQL

When sample and duplicate values are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL),

is any RPD  $\geq$  20%?

\_\_\_    [ ]      /  

is any RPD  $\geq$  100%?

\_\_\_    [ ]      /  

ACTION:

If the RPD is >20% but < 100%, flag (J) only the associated sample and its Field Duplicate results  $\geq$  CRQL. If the RPD is  $\geq$  100%, reject (R) and red-line only the associated sample and its Field Duplicate result  $\geq$  CRQL.

A.1.19.3    When the sample and/or duplicate value(s) < 5xCRQL (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate:

$> \pm$  CRQL?

\_\_\_    [ ]      /  

$> \pm 2 \times \text{CRQL}$ ?

\_\_\_    [ ]      /  

ACTION:

If the absolute difference is > CRQL, flag detects  $\geq$  MDL but < 5xCRQL as "J" and non-detects as "UJ". If the difference is > 2xCRQL, reject (R) and red-line non-detects

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YES      NO      N/A

and results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  of the sample  
and its Field Duplicate.

Soil/Sediment Field Duplicates

- A.1.19.4 Was a soil field duplicate pair  
collected and analyzed?  
(Check Sampling Trip Report)

[ ]

  /  

ACTION:

If yes, for each soil Field Duplicate  
pair proceed as follows:

Prepare Appendix A.4 for each Field Duplicate  
pair. Report on Appendix A.4 all sample and its  
Field Duplicate results in MG/KG from their  
respective Form I's. Calculate and report RPD when  
sample and its duplicate values are both greater  
than  $5 \times \text{CRQL}$ . Calculate and report the  
absolute difference when at least one value  
(sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the  
Field Duplicate analysis in accordance with the  
QC Criteria stated in Sections A.1.19.5 and A.1.19.6.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when  $\text{MDL} > \text{CRQL}$ .
4. If one value is  $> \text{CRQL}$  and the other  
value is non-detect, calculate the  
absolute difference between the  
value  $> \text{CRQL}$  and the MDL, and apply  
the criteria to qualify the results.

- A.1.19.5 Circle on each Appendix A.4 all  
values that have:

$\text{RPD} \geq 35\%$ , or Difference  $> \pm 2 \times \text{CRQL}$   
When sample and duplicate values  
are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for  
CRQL when  $\text{MDL} > \text{CRQL}$ ),

is any  $\text{RPD} \geq 35\%$  but  $< 120\%$ ?

   [ ]

  /  

is any  $\text{RPD} \geq 120\%$ ?

   [ ]

  /  

ACTION:

If the RPD is  $\geq 35\%$  but  $< 120\%$ ,

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flag only the associated sample  
and its Field Duplicate results  
 $\geq$  CRQL as "J". If the RPD is  $\geq$  120%,  
reject (R) and red-line only the sample  
and its Field Duplicate results  $\geq$  CRQL.

YES      NO      N/A

A.1.19.6 When the sample and/or duplicate value(s)  
<5xCRQL (substitute MDL for CRQL when MDL > CRQL),  
is the absolute difference between sample  
and Field Duplicate:

>  $\pm 2 \times$  CRQL?

—      [ ]        /  

>  $\pm 4 \times$  CRQL?

—      [ ]        /  

ACTION:

If the absolute difference is > 2xCRQL, flag  
Sample and its Field Duplicate results  $\geq$  MDL  
but <5xCRQL as "J" and non-detects as "UJ".  
If the difference is >4xCRQL, reject(R) and  
red-line non-detects and detects  $\geq$  MDL but  
<5xCRQL of the sample and its Field Duplicate.

A.1.20 Laboratory Control Sample (LCS) - Form VII

A.1.20.1 Was one LCS prepared and analyzed for:

Each SDG?

[ / ]      —      —

Each matrix type?

[ / ]      —      —

Each batch samples digested/distilled?  
For each Method(ICP-AES, ICP-MS, Hg, CN)  
used?

[ / ]      —      —  
[ / ]      —      —

Was an LCS prepared and analyzed with  
the samples?

[ / ]      —      —

ACTION:

If no for any of the above, prepare  
Telephone Record Log and contact  
CLP PO or TOPO for submittal of the  
LCS results. Flag (J) as estimated all  
the data for which an LCS was not  
analyzed.

NOTE:

If only one LCS was analyzed for

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YES      NO      N/A

more than 20 samples, then the first  
20 samples analyzed are not flagged(J),  
but all additional samples must be  
qualified (J).

A.1.20.2      Aqueous LCS

Circle on each Form VII the LCS percent  
recoveries outside control limits 80-120%.

NOTE: 1. Use digested ICV as LCS for aqueous mercury  
2. Use distilled ICV as LCS for aqueous cyanide

Is any LCS recovery:

Less than 50%?

—      [ ]      ✓

Between 50% and 79%?

—      [ ]      ✓

Between 121% and 150%?

—      [ ]      ✓

Greater than 150%?

—      [ ]      —/

ACTION:

If the LCS recovery is less than 50%,  
reject (R) and red-line all associated  
sample data (detects & non-detects); for  
a recovery between 50-79%, flag detects  
as "J" all non-detects as "UJ". if the LCS  
recovery is between 121-150%, flag only  
detects as "J". if the recovery is greater  
than 150%, reject (R) and red-line all detects.

A.1.20.3      Solid LCS

If an analyte's MDL is equal to or  
greater than the true value of LCS,  
disregard the "Action" below for that  
analyte even though the LCS is out of  
control limits.

Is the LCS "Found" value greater  
than the Upper Control Limit  
reported on Form VII?

—      [✓]      —

ACTION:

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If yes, flag (J) all the associated  
detects  $\geq$  MDL as estimated (J).

Is the LCS "Found" value lower  
than the Lower Control Limit  
reported on Form VII?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag detects as "J" and  
non-detects as "UJ".

A.1.21 ICP-AES/ICP-MS Serial Dilution - Form VIII

NOTE: Serial dilution analysis is required only  
when the initial concentration is equal to or  
greater than 50 x MDL.

A.1.21.1 Was a Serial Dilution analysis  
performed:

For each SDG?

☒ \_\_\_\_\_

On one of the SDG samples?

☒ \_\_\_\_\_

For each matrix type?

☒ \_\_\_\_\_

For each concentration range  
(low or med.)?

☒ \_\_\_\_\_

Was a Serial Dilution sample  
analyzed with the SDG samples?

☒ \_\_\_\_\_

ACTION:

If no for any of the above, flag  
as estimated (J) detects  $\geq$  MDL of  
all the SDG samples for which the  
ICP Serial Dilution Analysis was  
not performed.

A.1.21.2 Was a Field Blank or PE sample used  
for the Serial Dilution Analysis?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag as estimated (J) detects  
 $\geq$  MDL of all the SDG samples

A.1.21.3 Circle on Form VIII the Percent Differences  
(%D) between sample results and its dilution  
results that are outside the control limits  $\pm 10\%$

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YES    NO    N/A

when initial concentrations  $\geq 50 \times$  MDLs.

Are results outside the control limits flagged with an "E" (Lab Qualifier) on Form VIII and all Form I's?

[ ]    —      

ACTION:

If no, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.21.4    Are any %D values:

> 10%?

—          —

$\geq 100\%$ ?

—          —

ACTION:

If the Percent Difference (%D) is greater than 10%, flag (J) as estimated all associated samples whose raw data  $\geq$  MDL; if the %D is  $\geq 100\%$ , reject (R) and red-line all associated samples with raw data  $\geq$  MDL.

(NOTE: Replace "E" with "J" or "R" as appropriate.)

A.1.22    Total/Dissolved or Inorganic/Total Analytes

A.1.22.1    Were any analyses performed for dissolved as well as total analytes on the same sample(s)?

—          —

Were any analyses performed for inorganic as well as total analytes on the same sample(s)?

—          —

ACTION:

If yes, prepare a Form (Appendix A.5) to compare the differences between dissolved (or inorganic) and total analyte concentrations. Compute each difference on Appendix A.5 as a percent of the total analyte only when both of the following conditions are fulfilled:

- (1) The dissolved (or inorganic) concentration is greater than total concentration, and
- (2) greater than or equal to  $5 \times$  MDL.

A.1.22.2    Is any dissolved (or inorganic) concentration greater than its total concentration by more than 20%?

—    [ ]

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YES    NO    N/A

A.1.22.3    Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 50%?

—    ☐    ☒

ACTION:

If the percent difference is greater  
than 20%, flag (J) both dissolved/inorganic  
and total concentrations as estimated. If  
the difference is more than 50%, reject (R)  
and red-line both the values.

A.1.23    Field Blank - Form I

NOTE: Designate "Field Blank" as such on Form I

A.1.23.1    Was a Field/Rinsate Blank collected  
and analyzed with the SDG samples?

☐    ☒    —

If yes, is any Field/Rinsate Blank  
absolute value of an analyte on Form I  
greater than its CRQL (or 2xMDL when MDL > CRQL)?

—    ☐    ☒

If yes, circle the Field Blank value  
on Form I that is greater than the  
CRQL, (or 2 x MDL when MDL > CRQL).

Is any Field Blank value greater  
than CRQL also greater than the  
Preparation Blank value?

—    ☐    ☒

If yes, is the Field Blank value  
(> CRQL and > the prep. blank value)  
already rejected due to other QC  
criteria?

☐    —    ☒

ACTION:

If the Field Blank value was not rejected,  
reject all associated sample data (except  
the Field Blank results) greater than the  
CRQL but less than the Field Blank value.  
Reject on Form I's the soil sample results  
whose raw values in ug/L in the instrument  
printout are greater than the CRQL but less  
than the Field Blank value in ug/L. Flag as  
"J" detects between the Field Blank value and  
10xField Blank value. If the sample result  $\geq$  MDL  
but  $\leq$  CRQL, replace it with CRQL-U.

If the Field Blank value is less than the

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YES    NO    N/A

Prep. Blank value, do not qualify the sample results due to the Field Blank criteria.

NOTE:

1. Field Blank result previously rejected due to other criteria cannot be used to qualify field samples.
2. Do not use Rinsate Blank associated with soils to qualify water samples and vice versa.

A.1.24    Verification of Instrumental Parameters - Form IX, XA, XB, XI

A.1.24.1    Is verification report present for:

Method Detection Limits (Form IX-Annually)?

☒    ☐    ☐

ICP-AES Interelement Correction Factors (Form XA & XB -Quarterly)?

☒    ☐    ☐

ICP-AES & ICP-MS Linear Ranges (Form XI-Quarterly)?

☒    ☐    ☐

ACTION:

If no, contact CLP PO/TOPO for submittal from the laboratory.

A.1.24.2    Method Detection Limits - Form IX

A.1.24.2.1 Are MDLs present on Form IX for:

All the analytes?

☒    ☐    ☐

All the instruments used?

☒    ☐    ☐

Digested and undigested samples and Calib.Blanks?

☒    ☐    ☐

ICP-AES and ICP-MS when both instruments are used for the same analyte?

☒    ☐    ☒

ACTION:

If no for any of the above, prepare Telephone Record Log and contact CLP PO/TOPO for submittal of the MDLs from the laboratory. Report to CLP PO and write in the Contract Problems/Non-Compliance Section of the Data Review Narrative if the MDL concentration is not less than ½ CRQL.

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A.1.24.2.2 Is MDL greater than the CRQL  
for any analyte?

<u>YES</u>	<u>NO</u>	<u>N/A</u>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If yes, is the analyte concentration  
on Form I greater than 5 x MDL for  
the sample analyzed on the instrument  
whose MDL exceeds CRQL?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, flag as estimated (J) all  
values less than five times MDL for  
the analyte whose MDL exceeds the CRQL.

A.1.24.3    Linear Ranges - Form XI

A.1.24.3.1 Was any sample result higher than  
the high linear range for ICP-AES  
or ICP-MS?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

Was any sample result higher than  
the highest calibration standard  
for mercury or cyanide?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	-------------------------------------	-------------------------------------

If yes for any of the above, was  
the sample diluted to obtain the  
result reported on Form I?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, flag (J) as estimated the  
affected detects ( $\geq$  MDL) reported  
on Form I.

A.1.25    ICP-MS Tune Analysis - Form XIV

A.1.25.1 Was the ICP-MS instrument  
tuned prior to calibration?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, reject (R) and red-line all  
sample data for which tuning was not  
performed.

A.1.25.2 Was the tuning solution analyzed  
or scanned at least five times  
consecutively?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Were all the required isotopes  
spanning the analytical range  
present in the tuning solution?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Was the mass resolution within

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YES    NO    N/A

0.1 amu for each isotope in the  
tuning solution?

[ ]

—

✓

Was %RSD less than 5% for each  
isotope of each analyte in the  
tuning solution?

[ ]

—

✓

ACTION:

If no for any of the above, qualify  
all results  $\geq$  MDL associated with that  
Tune as estimated "J", and all non-detects  
associated with that Tune as "UJ".

A.1.26    ICP-MS Internal Standards - Form XV

A.1.26.1    Were the Internal Standards added  
to all the samples and all QC  
samples and calibration standards  
(except the Tuning Solution)?

[ ]

—

✓

Were all the target analyte  
masses bracketed by the masses  
of the five internal standards?

[ ]

—

✓

ACTION:

If none of the Internal Standards was  
added to the samples, reject (R) and  
red-line all the associated sample data  
(detects & non-detects). If internal  
standards were used but did not cover all  
the analyte masses, reject (R) and red-line  
only the analyte results not bracketed by  
the internal standard masses.

A.1.26.2    Was the intensity of an Internal  
Standard in each sample within 60-125%  
of the intensity of the same Internal  
Standard in the calibration blank?

[ ]

—

✓

If no, was the original sample diluted  
two fold, Internal Standard added and the  
sample re-analyzed?

[ ]

—

✓

Was the %RI for the two fold diluted sample  
within the acceptance limits (60-125%)?

[ ]

—

✓

ACTION:

If no for any of the above, flag detects  
as "J" and non-detects "UJ" of all the  
analytes with atomic masses between the

atomic mass of the internal standard lighter

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than the affected internal standard, and the atomic mass of the internal standard heavier than the affected internal standard.

A.1.27 Percent Solids of Sediments

A.1.27.1 Are percent solids in sediment(s):

< 50%?

\_\_\_\_\_ [ / ] \_\_\_\_\_

ACTION:

If yes, qualify as estimated (J) all detects and non-detects of a sample that has percent solids less than 50% (i.e., moisture content greater than 50%).

NOTE:

Flag(J) only the sample results that were not previously flagged due to other QC criteria.

Inorganic Data Review Narrative

Case#	_____	Site:	_____	Matrix: Soil	_____
SDG#	_____	Lab:	_____	Water	_____
Sampling Team:	_____	Reviewer:	_____	Other	_____

A.2.1 Data Validation Flags:

The following flags may have been applied in red by the data validator and must be considered by the data user.

- J - This flag indicates the result qualified as estimated
- R and Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.
- U - This data validation qualifier is applied to sample results  $\geq$  MDL when associated blank is contaminated
- Fully Usable Data - The results that do not carry "J" or "red-line" are fully usable.

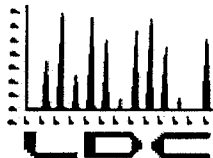
A.2.2 Laboratory Qualifiers:

The CLP laboratory applies a contractual qualifier on all

## 33666-Glen Cove-10 Garvies Point Road

SDG: 480743001

Analytical Method		SW6010C										
Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Report	Detect	Lab Qual	Val Qual	Final qual	RL	MDL	Units
4802233061A	4802233061A	LEAD	1/19/2015		Yes	N	U		U	5.1	0.25	
4802233061A	4802233061A	ARSENIC	1/19/2015		Yes	N	U		U	10.3	0.41	
4802236661A	4802236661A	LEAD	1/21/2015		Yes	N	U		U	5.0	0.24	
4802236661A	4802236661A	ARSENIC	1/21/2015		Yes	N	U		U	10.0	0.40	
4802243541F	4802243541F	LEAD	1/29/2015		Yes	N	U		U	0.010	0.0030	
4802248292A	4802248292A	LEAD	1/29/2015		Yes	N	U		U	0.010	0.0030	
CC-C-023 (6-8)-20150115	480-74300-2	LEAD	1/19/2015	267	Yes	Y				5.9	0.28	mg/kg
CC-C-023 (6-8)-20150115	480-74300-2	LEAD	1/21/2015	265	No	Y				5.7	0.27	mg/kg
CC-C-029 (8-10)-20150115	480-74300-4	LEAD	1/19/2015	239	No	Y				6.4	0.31	mg/kg
CC-C-029 (8-10)-20150115	480-74300-4	LEAD	1/21/2015	416	Yes	Y				6.2	0.30	mg/kg
CC-C-030 (10)-20150115	480-74300-6	ARSENIC	1/19/2015	51.9	No	Y				12.2	0.49	mg/kg
CC-C-030 (10)-20150115	480-74300-6	LEAD	1/19/2015	13900	No	Y				30.5	1.5	mg/kg
CC-C-030 (10)-20150115	480-74300-6	ARSENIC	1/21/2015	67.8	Yes	Y				11.9	0.48	mg/kg
CC-C-030 (10)-20150115	480-74300-6	LEAD	1/22/2015	19900	Yes	Y				29.8	1.4	mg/kg
CC-C-030 (10)-20150115	480-74300-6	LEAD	1/29/2015	51.4	Yes	Y				0.010	0.0030	mg/l
CC-C-030 (8)-20150115	480-74300-5	LEAD	1/19/2015	1780	No	Y				5.7	0.27	mg/kg
CC-C-030 (8)-20150115	480-74300-5	LEAD	1/21/2015	8620	Yes	Y				6.2	0.30	mg/kg
CC-C-030 (8)-20150115	480-74300-5	LEAD	1/29/2015	68.9	Yes	Y				0.010	0.0030	mg/l
LT-C-024 (2-4)-20150115	480-74300-1	LEAD	1/19/2015	93.9	Yes	Y				5.7	0.28	mg/kg
LT-C-024 (2-4)-20150115	480-74300-1	LEAD	1/21/2015	72.3	No	Y				5.6	0.27	mg/kg



## LABORATORY DATA CONSULTANTS, INC.

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1750 New Highway  
Farmingdale, NY 11735  
ATTN: Mr. Ellis Koch

February 11, 2015

SUBJECT: Glen Isle, Data Validation

Dear Mr. Koch,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on February 6, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #33693:**

**SDG #**

**Fraction**

480-73951-1, 480-73951-2, 480-74220-1      Metals

The data validation was performed under Category B guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA Region 2 Standard Operating Procedure for the Evaluation of Metals for the Contract Laboratory Program, SOP HW-2, Revision 13, September 2006
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist

33693ST.wpd

**Site:** Glen Isle  
**Laboratory:** TestAmerica, Inc.  
**Report No.:** 480-73951-1  
**Reviewer:** Christina Rink/Laboratory Data Consultants for RXR Glen Isle Partners  
**Date:** February 10, 2015

**Samples Reviewed and Evaluation Summary**

FIELD ID	LAB ID	FRACTIONS VALIDATED
LT-C-056 (2-4)	480-73951-1	Arsenic
LT-G-019 (2-14)	480-73951-2	Arsenic
LT-C-003 (0-2)	480-73951-3	Arsenic
LT-C-024 (2-4)	480-73951-4	Arsenic and Lead
LT-C-026 (6-8)	480-73951-5	Arsenic
LT-C-035 (4-6)	480-73951-6	Arsenic
CC-C-022 (0-2)	480-73951-7	Arsenic and Lead
CC-C-019 (0-2)	480-73951-8	Arsenic and Lead
CC-C-023 (6-8)	480-73951-9	Lead
CC-C-028 (0-2)	480-73951-10	Arsenic
CC-C-029 (8-10)	480-73951-11	Lead
CC-C-030 (8-10)	480-73951-12	Lead
CC-C-030 (8-10)MS	480-73951-12MS	Lead
CC-C-030 (8-10)MSD	480-73951-12MSD	Lead

**Associated QC Samples(s):**

Field/Trip Blanks: None Associated

Field Duplicate pair: None Associated

The above-listed soil samples were collected on January 7, 2015 through January 9, 2015 and were analyzed for arsenic and lead by SW-846 methods 6010C. The data validation was performed in accordance with the USEPA Region 2 *Standard Operating Procedure for the Evaluation of Metals for the Contract Laboratory Program*, SOP HW-2, Revision 13 (September 2006) and the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*, EPA 540-R-10-011 (January 2010), modified as necessary to accommodate the non-CLP methodologies used.

The inorganic data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness
- Holding Times and Sample Preservation
- Instrument Calibration
- Contract Required Quantitation Limit (CRQL) Standard Recoveries
- Blank Analysis Results
- Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results
- Matrix Spike (MS) Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Certified Reference Material (CRM) Results
- Serial Dilution Results
- Moisture Content
- Detection Limits Results
- Sample Quantitation Results

### **Overall Evaluation of Data and Potential Usability Issues**

All results are usable as reported or usable with minor qualification due to sample matrix quality control outliers.

The validation findings were based on the following information.

### **Data Completeness**

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

### **Holding Times and Sample Preservation**

All criteria were met.

### **Instrument Calibration**

All criteria were met.

### **CRQL Standard Recoveries**

All criteria were met.

### **Blank Results**

No analytes were detected in the laboratory method and instrument blank samples.

No field blanks were identified in this SDG.

### **ICP ICS Results**

All analytes were within control limits in the ICSA and ICSAB analyses.

### **MS/MSD Results**

The laboratory performed MS and MSD analyses on sample CC-C-030 (8-10) for lead. The following table lists the analytes which exhibited recoveries outside of the control limits of 75 - 125% in the MS/MSD and the resulting validation actions.

MS Sample	Analyte	MS %R	MSD %R	RPD Limits	QC Limits	Associated Samples	Validation Actions
CC-C-030 (8-10)MS/MSD	Lead	-63	-69	-	75-125	LT-C-024 (2-4) CC-C-022 (0-2) CC-C-019 (0-2) CC-C-023 (6-8) CC-C-029 (8-10) CC-C-030 (8-10)	J detects

Estimate (J) the detect lead results for the samples listed above due to low MS percent recovery results. The results may be biased low. The results are usable for project objectives as estimated values which may have a minor effect on the data usability.

### **Laboratory Duplicate Results**

Laboratory duplicates were not associated with this sample set. Validation action was not required on this basis.

### **Field Duplicate Results**

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

### **CRM Results**

All criteria were met.

### **Serial Dilution Results**

A serial dilution analysis was performed on sample CC-C-030 (8-10) for lead. All criteria were met.

### **Moisture Content**

All criteria were met.

### **Detection Limits Results**

No results were reported below the reporting limit (RL).

Due to interfering analytes, select samples were analyzed at dilutions. The following table lists the sample dilutions which were performed and the results reported. RLs were elevated accordingly.

<b>Sample</b>	<b>Metal Analysis Reported</b>
LT-C-026 (6-8)	5-fold dilution due to high interfering analytes

### **Sample Quantitation Results**

Calculations were spot-checked; no discrepancies were noted.

## DATA VALIDATION QUALIFIERS

- U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.
- J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified “J” data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The ‘J’ data may be biased high or low or the direction of the bias may be indeterminable.
- UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified “UJ” data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The ‘UJ’ data may be biased low.
- R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 33693A4b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: 480-73951-1

Cat B

Laboratory: Test America, Inc.

Date: 2/9/15

Page: 1 of 1

Reviewer: *ay*2nd Reviewer: *ay***METHOD:** As & Pb (EPA SW 846 Method 6010C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A A	
II.	Instrument Calibration	A	
III.	ICP Interference Check Sample (ICS) Analysis	A	
IV.	Laboratory Blanks	A	
V.	Field Blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	
VII.	Duplicate sample analysis	N	
VIII.	ICP Serial Dilution	A	
IX.	Laboratory control samples	A	CRM
X.	Field Duplicates	N	
XI.	Sample Result Verification	A	all RRL
XII.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	LT-C-056 (2-4)	480-73951-1	Soil	01/07/15
2	LT-G-019 (2-14)	480-73951-2	Soil	01/07/15
3	LT-C-003 (0-2)	480-73951-3	Soil	01/07/15
4	LT-C-024 (2-4)	480-73951-4	Soil	01/07/15
5	LT-C-026 (6-8) As @ 5x due to interfering element	480-73951-5	Soil	01/07/15
6	LT-C-035 (4-6)	480-73951-6	Soil	01/07/15
7	CC-C-022 (0-2)	480-73951-7	Soil	01/09/15
8	CC-C-019 (0-2)	480-73951-8	Soil	01/09/15
9	CC-C-023 (6-8)	480-73951-9	Soil	01/09/15
10	CC-C-028 (0-2)	480-73951-10	Soil	01/09/15
11	CC-C-029 (8-10)	480-73951-11	Soil	01/09/15
12	CC-C-030 (8-10)	480-73951-12	Soil	01/09/15
13	CC-C-030 (8-10)MS	480-73951-12MS	Soil	01/09/15
14	CC-C-030 (8-10)MSD	480-73951-12MSD	Soil	01/09/15
15				
16				
17				



LDC #: 33693A46

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates

Page: 6 of 1

Reviewer: 9

2nd Reviewer: \_\_\_\_\_

**METHOD:** Trace metals (EPA SW 846 Method 6010B/6020A/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A

Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water samples and  $\leq 35\%$  for soil samples?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \_\_\_\_\_

LDC #: 3693A45

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: OR  
2nd Reviewer: [Signature]

**METHOD:** Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV	ICP (Initial calibration)	As	0.35907	0.375	96	96	Y
	ICP/MS (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	Pb	0.47963	0.5	96	96	Y
	ICP/MS (Continuing calibration)						
	CVAA (Continuing calibration)						

Comments:

LDC #: 336734 5**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**Page: 1 of 1  
Reviewer: 9  
2nd Reviewer: 2**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,  
Found = SSR (spiked sample result) - SR (sample result).  
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)  
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
ICSAB	ICP interference check	As	0.10296	0.1	103	103	Y
LCS	Laboratory control sample	As	151	137.2	90.7	90.7	Y
13	Matrix spike	Pb	(SSR-SR) <del>-27.82</del> 31.38	44.1	-63	-63	Y
13/14	Duplicate	↓	146.96 140.35	145.79 151.76	1	1	Y
12	ICP serial dilution	↓	174.7791	175.5354	1.8	1.8	Y

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LDC #: 3343A45**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**Page: 1 of 1  
Reviewer: OR  
2nd reviewer: C**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?  
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?  
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for As were recalculated and verified using the following equation:Concentration =  $\frac{(RD)(FV)(Dil)}{(In. Vol.)}$ 

Recalculation:

RD = Raw data concentration  
FV = Final volume (ml)  
In. Vol. = Initial volume (ml) or weight (G)  
Dil = Dilution factor

$$1 = \frac{0.112 \text{ mg/L (50 mL)}}{0.5005 \text{ g (0.852)}} = 0.13.13 \text{ mg/L}$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	1	As	13.1	13.1	Y
	2	↓	3.5	3.5	
	3	↓	2.7	2.7	
	4	Pb	7.2	7.2	
	5	As	4.3	4.3	
	6	↓	652	652	
	7	Pb	371	371	
	8	↓	473	473	
	9	↓	215	215	
	10	As	13.0	13.0	
	11	Pb	141	141	
	12	Pb	175	175	

Note: \_\_\_\_\_

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		<u>YES</u>	<u>NO</u>	<u>N/A</u>
A.1.1	<u>Contract Compliance Screening Report</u> Present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>ACTION:</u> If no, contact RSCC/PO.				
A.1.2	<u>Record of Communication (from RSCC)</u>  Present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>ACTION:</u> If no, request from the RSCC.				
A.1.3	<u>Sampling Trip Report</u>  Present and complete?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>ACTION:</u> If no, contact RSCC/PO.				
A.1.4	<u>Chain of Custody/Sample Traffic Report</u>  Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Signature of sample custodian present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>ACTION:</u> If no, contact RSCC/WAM/PO.				
A.1.5	<u>Cover Page</u>  Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Is the Cover Page properly filled in and the verbatim signed by the lab manager or the manager's designee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Do the sample identification numbers on the Cover Page agree with sample Identification numbers on:			
	(a) Traffic Report Sheet?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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(b) Form I's?

<u>YES</u>	<u>NO</u>	<u>N/A</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is the number of samples on the Cover  
Page the same as the number of  
samples on the Traffic Report sheet  
and the Regional Record of Communication  
(ROC) for the data Case?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

**ACTION:**

If no for any of the above, prepare  
Telephone Record Log and contact RSCC/PO  
for re-submittal of the corrected Cover Page  
from the laboratory.

**A.1.6 SDG Narrative, DC-1 & DC-2 Form**

Is the SDG Narrative present?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Is Sample Log-In Sheet(Form DC-1)  
present and complete?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Is Complete SDG Inventory Sheet(Form DC-2)  
present and complete?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

**ACTION:**

If no, write in the Contract-Problems/  
Non-Compliance Section of the Data Review  
Narrative.

**A.1.7 Form I to XV**

**A.1.7.1**    Are all the Form I through Form XV  
labeled with:

Laboratory Name?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Laboratory Code?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

RAS/Non-RAS Case No.?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

SDG No.?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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YES      NO      N/A

Contract No.?

☐      ☐      ☒

**ACTION:**

If no for any of the above, note under Contract Problem/Non-Compliance Section of the "Data Review Narrative" and contact PO for corrected Form(s) from the laboratory.

A.1.7.2

After comparing values on Forms I-IX against the raw data, do any computation/transcription errors exceed 10% of the reported values on the Forms for:

(a) all analytes analyzed by ICP-AES?

☐      ☒      ☐

(b) all analytes analyzed by ICP-MS?

☐      ☐      ☒

(c) Mercury?

☐      ☐      ☒

(d) Cyanide?

☐      ☐      ☒

**ACTION:**

If yes, prepare Telephone Record Log and contact CLP PO/TOPO for the corrected data from the laboratory.

**A.1.8 Raw Data**

Data shall not be validated without the hard/electronic copies of the associated raw data for samples and QC samples.

**A.1.8.1      Digestion/Distillation Log**

Digestion Log for ICP-AES  
(Form XII) present?

☒      ☐      ☐

Digestion Log for ICP-MS  
(Form XII) present?

☐      ☐      ☒

Digestion Log for mercury  
(Form XII) present?

☐      ☐      ☒

Distillation Log for cyanide  
(Form XII) present?

☐      ☐      ☒

Are pH values for metals and

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YES    NO    N/A

cyanide reported for each  
aqueous sample?

☐    ☐    ☒

Are percent solids calculations  
present for soils/sediments?

☒    ☐    ☐

Are preparation dates present on the  
sample preparation logs/bench sheets?

☒    ☐    ☐

NOTE:

Digestion/Distillation log must include weights, volumes,  
and dilutions used to obtain the reported results.

A.1.8.2    Is the analytical instrument  
real-time    printouts present for:

ICP-AES?

☒    ☐    ☐

ICP-MS?

☐    ☐    ☒

Mercury?

☐    ☐    ☒

Cyanide?

☐    ☐    ☒

Are all laboratory bench sheets  
and instrument raw data printouts  
necessary to support all sample  
analyses and QC operations:

Legible?

☒    ☐    ☐

Properly labeled?

☒    ☐    ☐

Are all field samples, QC samples  
and field QC samples present on:

Digestion/Distillation log?

☒    ☐    ☐

Instrument Printouts?

☒    ☐    ☐

ACTION:

If no for any of the above questions in  
Section A.1.8.1 and Section A.1.8.2, write  
Telephone Record Log and contact TOPO/PO  
for re-submittal from the laboratory.

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YES      NO      N/A

**A.1.9 Technical Holding Times: (Aqueous and soil samples)**

(Examine sample Traffic Reports and digestion/distillation logs to determine the holding time from the sample collection date to the sample preparation date.)

A.1.9.1 Cyanide distillation(14 days)exceeded?      ☐ ☒

Mercury analysis(28 days) exceeded?      ☐ ☒

Other Metals analysis(180 days)exceeded?      ☐ ☒

**ACTION:**

If yes, reject (R) and red-line non-detects and flag as estimated (J)results  $\geq$  MDL even if sample(s) was preserved properly.

**NOTE:**

In addition to qualifying the data, a list of all samples and analytes which exceeded the holding times must be prepared. Report for each sample the number of days that were exceeded. (Subtract the sample collection date from the sample preparation date). Attach this list to the data review narrative.

A.1.9.2 Is pH of aqueous samples for:

Metals Analysis  $\leq 2$ ?      ☐ ☒

Cyanide Analysis  $\geq 12$ ?      ☐ ☒

**ACTION:**

If no for any of the above, flag non-detects as "R" and detects as "J".

A.1.9.3 Is the cooler temperature  $\leq 10$  C°?      ☒ ☐

**ACTION:**

If cooler temperature is  $>10$  °C , flag non-detects as "UJ" and detects as "J".

**A.1.10 Final Data Correctness - Form I**

A.1.10.1 Are Form I's for all samples

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YES    NO    N/A

present and complete?

☒    ☐    ☐

**ACTION:**

If no, prepare Telephone Record  
Log and contact CLP PO/TOPO for  
submittal from the laboratory.

- A.1.10.2    Verify there are no calculation and transcription errors in the results reported on Form I's. Circle on each Form I all results that are incorrect.

Is the calculation error less than 10% of the correct result? ☒    ☐    ☐

Are results on Form I's reported in correct units (ug/L for aqueous and MG/KG for soils)? ☒    ☐    ☐

Are results on Form I'S reported by    correct significant figures? ☒    ☐    ☐

Are soil sample results on Form I's corrected for percent solids?

☒    ☐    ☐

Are all "less than MDL" values reported by the CRQLs and coded with "U"?

☒    ☐    ☐

Are values less than the CRQLs but greater than or equal to the MDLs flagged with "J"?

☒    ☐    ☐

Are appropriate contractual quality control and Method qualifiers used?

☒    ☐    ☐

**ACTION:**

If no for any of the above questions, prepare Telephone Record Log, and contact CLP PO/TOPO for corrected data.

- A.1.10.3    Do EPA sample identification numbers and the corresponding laboratory sample identification numbers match on the Cover Page, Form I's and in the raw data?

☒    ☐    ☐

Was a brief physical description

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YES      NO      N/A

of the samples before and after  
digestion given on the Form I's?

[ ]      ☒      ☐

Was any sample result outside the  
mercury/cyanide calibration range  
or the ICP-AES/ICP-MS linear range  
diluted and noted on the Form I?

[ ]      ☒      ☐

**ACTION:**

If no for any of the above, note under  
the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative.

**A.1.11 Initial Calibration**

A.1.11.1 Is a record of at least 2 point  
(A blank and a standard)calibration  
present for ICP-AES analysis?

☒      ☐      ☐

Is a record of at least 2 point  
(a blank and a standard)calibration  
present for ICP-MS analysis?

[ ]      ☐      ☒

Is a record of at least 5 point calibration  
(a blank & 4 standards)present for Hg analysis?

[ ]      ☐      ☒

Is a record of at least 4 point calibration  
(a blank & 4 standards)present for cyanide?

[ ]      ☐      ☒

**ACTION:**

If incomplete or no initial calibration  
was performed, reject (R) and red-line  
the associated data (detects & non-detects).

Is one initial calibration standard  
at the CRQL level for cyanide and  
mercury?

[ ]      ☐      ☒

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.11.2 Is the curve correlation  
coefficient  $\geq 0.995$  for:

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	YES	NO	N/A
Mercury Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cyanide Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICP-AES (more than 2 point Calib.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP-MS (more than 2 point calib.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no, qualify the associated sample results  $\geq$  MDL as estimated "J" and non-detects as "UJ".

NOTE:

The correlation coefficient shall be calculated by the data validator using standard concentrations and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.12 Initial and Continuing Calibration Verification- Form IIA

A.1.12.1	Present and complete for every metal and cyanide?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Present and complete for ICP-AES and ICP-MS when both these methods were used for the same analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, prepare a Telephone Record Log and contact PO/TOPO for re-submittal from the laboratory.

A.1.12.2	Was a Continuing Calibration Verification performed every 10 samples or every 2 hours whichever is more frequent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
----------	---	-------------------------------------	--------------------------	--------------------------

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.12.3	Was an ICV or a mid-range standard distilled and analyzed with each batch of cyanide samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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YES    NO    N/A

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative and qualify results  $\geq$  MDL as estimated (J).

- A.1.12.2    Circle on each Form IIA all percent recoveries that are outside the contract windows.

Are ICV/CCVs within control limits for:

Metals - 90-110%R?

[ ☒ ]    ☐    ☐

Hg - 80-120%R?

[ ☐ ]    ☐    [ ☒ ]

Cyanide - 85-115%R?

[ ☐ ]    ☐    [ ☒ ]

ACTION:

If no, qualify all samples between a previous technically acceptable CCV standard and a subsequent technically acceptable CCV standard as follows:

Qualify as estimated (J) all detects and non-detects, if the ICV/CCV %R is between 75-89% (65-79% for Hg; 70-84% for CN). Qualify only positive results ( $\geq$  MDL) as "J" if the ICV/CCV %R is between 111-125% (121-135% for Hg; 116-130% for CN). Reject (R) and red-line only detects if the recovery is greater than 125% (135% for Hg; 130% for CN). Reject (R) and red-line all associated results (hits and non-detects) if the recovery is less than 75% (65% for Hg; 70% for CN).

NOTE:

For ICV that does not fall within the acceptance limits, qualify all samples reported from the analytical run.

- A.1.12.3    Was the distilled ICV or mid-range standard for cyanide within acceptance limits (85-115%)?

[ ☐ ]    ☐    [ ☒ ]

ACTION:

If no, Qualify all cyanide results  $\geq$  MDL as "J".

A.1.13 CRQL Standard Analysis - Form IIB

- A.1.13.1    For each ICP-AES run, was a CRI

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(CRQL or MDL when MDL > CRQL)  
standard analyzed?

(Note: CRI is not required for Al, Ba,  
Ca, Fe, Mg, Na and K.)

YES NO N/A

☒ ☐ ☐

For each ICP-MS run, was a CRI  
(CRQL or MDL when MDL > CRQL) standard  
analyzed for each mass/isotope used  
for the analysis?

☐ ☐ ☒

For each mercury run, was a CRQL  
standard analyzed?

☐ ☐ ☒

For each cyanide run, was a CRQL  
standard analyzed?

☐ ☐ ☒

**ACTION:**

If no for any of the above, write  
this deficiency in the Contract Problems/  
Non-Compliance Section of the Data Review  
Narrative, inform CLP PO and flag results  
in the affected ranges (detects <2xCRQL) as J  
and non-detects UJ.

The affected ranges are:

ICP-AES Analysis - \*True Value  $\pm$  CRQL

ICP-MS Analysis - \*True Value  $\pm$  CRQL

Mercury Analysis - \*True Value  $\pm$  CRQL

Cyanide Analysis - \*True Value  $\pm$  CRQL

\* True value of the CRQL Standard

A.1.13.2 Was a CRQL standard analyzed after the  
ICV/ICB, before the final CCV/CCB and  
once every 20 analytical samples in  
the analytical run for each analysis?

☐ ☒ ☐

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the  
"Data Review Narrative".

A.1.13.3 Circle on each Form IIB all percent  
recoveries that are outside the  
acceptance windows.

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Is the CRQL standard within control limits for:

Metals(ICP-AES/ICP-MS)- 70 - 130%?

Mercury- 70 - 130%?

Cyanide - 70 - 130%?

YES      NO      N/A

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**ACTION:**

If no, flag detects <2xCRQL as "J" and non-detects as "UJ" if the CRQL standard recovery is between 50-69%. Flag(J) only detects <2xCRQL if the recovery is between 131% and ≤180%. If the recovery is less than 150%, reject(R) and red-line non-detects and detects < 2xCRQL, and flag (J) detects between 2xCRQL and ICV/CCV. Reject and red-line only detects <2xCRQL and flag (J) detects ≥ 2xCRQL but < ICV/CCV if the recovery is > 180%.

**NOTE:**

1. Qualify all field samples analyzed between a previous technically acceptable analysis of the CRQL standard and a subsequent acceptable analysis of the CRQL standard
2. Flag (J) or reject (R) only the final sample results on Form I's when Sample raw data are within the affected ranges and the CRQL standard is outside the acceptance windows.
3. The samples and the CRQL standard must be analyzed in the same analytical run.

**A.1.14 Initial and Continuing Calibration Blanks - Form III**

A.1.14.1 Present and complete for all the instruments used for the metals and cyanide analyses?

Was an initial Calibration Blank analyzed after ICV?

Was a continuing Calibration Blank analyzed after every CCV and every 10 samples or every 2 hours, whichever is more frequent?

Were the ICB & CCB values ≥ MDL but < CRQL reported on Form III and flagged "J" by

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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YES      NO      N/A

using MDLs from direct analysis(Preparation Method "NP1")?

[✓]

(Check Form III against the raw data)

ACTION:

If no, inform CLP PO/TOPO and make a note in the Contract-Problems/Non-Compliance Section of the "Data Review Narrative".

A.1.14.2 Circle with red pencil on each Form III all Calib. Blank values that are:

$\geq$  MDL but  $\leq$  CRQL

$>$  CRQL

A.1.14.2.1 When MDL < CRQL, is any Calib. Blank value  $\geq$  MDL but  $\leq$  CRQL?

\_\_\_\_ [✓] \_\_\_\_

ACTION:

If yes, change sample results  $\geq$  MDL but  $\leq$  CRQL to the CRQL with a "U".  
Do not qualify non-detects.

A.1.14.2.2 When MDL < CRQL, is any Calib. Blank value  $>$  CRQL?

\_\_\_\_ [✓] \_\_\_\_

ACTION:

If yes, reject (R) and red line the associated sample results  $>$  CRQL but  $<$  ICB/CCB Blank Result. Flag as "J" detects  $>$  ICB/CCB blank value but  $<$  10xICB/CCB value. Change the sample results  $\geq$  MDL but  $\leq$  the CRQL to CRQL with a "U".

A.1.14.2.3 Is any Calibration Blank value below the negative CRQL?

\_\_\_\_ [✓] \_\_\_\_

ACTION:

If yes, flag (J) as estimated all associated sample results  $\geq$  CRQL but  $<$  10xCRQL.

NOTE:

1. For ICB that does not meet the technical QC Criteria, apply the action to all samples

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YES    NO    N/A

reported from the analytical run.

2. For CCBs that do not meet the technical QC criteria, apply the action to all samples analyzed between a previous technically acceptable analysis of CCB and a subsequent technically acceptable analysis of the CCB in the analytical run.,

A.1.15    Preparation Blank - FORM III

NOTE: The Preparation Blank for mercury is the same as the calibration blank.

A.1.15.1    Was one Preparation Blank prepared with and analyzed for:

Each Sample Delivery Group (SDG)?

[ ☒ ]    ☐    ☐

Each batch of the SDG samples digested/distilled?

[ ☒ ]    ☐    ☐

Each matrix type?

[ ☒ ]    ☐    ☐

All instruments used for metals and cyanide analyses?

[ ☒ ]    ☐    ☐

ACTION:

If no for any of the above, flag as estimated (J) all the associated positive data <10xMDL for which the Preparation Blank was not analyzed.

NOTE:

If only one blank was analyzed for more than 20 samples, then the first 20 samples analyzed are not estimated (J), but all additional samples must be qualified (J).

A.1.15.2    Circle with red pencil on each Form III all Prep. Blank values that are:

≥ MDL but ≤ CRQL, and

> CRQL

A.1.15.2.1    When MDL < CRQL, is any preparation blank value ≥ MDL but ≤ CRQL?

\_\_\_\_\_ [ ☒ ] \_\_\_\_\_

ACTION:

If yes, change sample result ≥ MDL

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YES    NO    N/A

but  $\leq$  CRQL to CRQL with a "U".

A.1.15.2.2 When the MDL  $\leq$  CRQL, is any Preparation Blank value greater than its CRQL?

\_\_\_ ☒ \_\_\_

If yes, is the Prep. Blank value greater than the value of the associated Field Blank collected and analyzed with the SDG samples?

\_\_\_ ☐ ☒ \_\_\_

If yes, is the lowest concentration of that analyte in the associated samples less than 10 times the Preparation Blank value?

\_\_\_ ☐ ☒ \_\_\_

ACTION:

If yes, reject (R) and red-line all associated sample results greater than the CRQL but less than the Prep.Blank value. Flag as "J" detects > Prep. Blank value but <10xPrep.Blank. If the sample result  $\geq$  MDL but  $\leq$  CRQL, replace it with CRQL-U.

If the Prep. Blank value is less than the same analyte value in the Field Blank, do not qualify the sample results due to the Prep. Blank criteria.

NOTE:

Convert soil sample result to mg/Kg on wet weight basis to compare with the soil Prep. Blank result on Form III.

A.1.15.2.3 Is the Prep. Blank concentration below the negative CRQL?

\_\_\_ ☒ \_\_\_

ACTION:

If yes, flag (J) all associated sample results less than 10xCRQL. Qualify non-detects as estimated (UJ).

A.1.15.2.4 When the MDL is greater than the CRQL, is the preparation blank concentration on Form III greater than two times the MDL?

\_\_\_ ☐ ☒ \_\_\_

ACTION:

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YES    NO    N/A

If yes, reject (R) and red-line all positive sample results with sample raw data less than 10 times the Preparation Blank value.

A.1.16    ICP-AES/ICP-MS Interference Check Sample (ICS) - Form IV

NOTE: Not required for CN, Hg, Al, Ca, Fe and Mg.

A.1.16.1    Present and complete?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

Was ICS analyzed at the beginning and end of each analytical run, and once for every 20 analytical samples?

[ ☐ ]    [ ☒ ]    \_\_\_\_\_

Was ICS analyzed at the beginning of the ICP-MS analytical run?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

ACTION:

If no, flag as estimated (J) all sample results.

A.1.16.2    ICP-AES Method

A.1.16.2.1    ICSA Solution:

For ICP-AES, are the ICSA "Found" analyte values within the control limits  $\pm$  of CRQL of the true/established mean value?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSA Solution on Form IV?

[ ☐ ]    \_\_\_\_\_    [ ☒ ]

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated only sample results  $\geq$ MDL

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YES    NO    N/A

for which the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag non-detects as "UJ" and detects as "J".

A.1.16.2.3 ICSAB Solution

For ICP-AES, are all analyte results in ICSAB within the control limits of 80-120 of the true/established mean value?

☒    ☐    ☐

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSAB Solution on Form IV?

☐    ☐    ☐

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79%, qualify sample results  $\geq$  MDL as "J" and non-detects as "UJ". Reject (R) and red-line all sample results (detects & non-detects) for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only positive results.

A.1.16.3 ICP-MS Method

A.1.16.3.1 ICSA Solution:

For ICP-MS, are the ICSA "Found" analyte values within the control limits of  $\pm$ CRQL of the true/established mean value?

☐    ☐    ☒

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated only sample results  $\geq$  MDL if the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag the associated sample detects as "J" and non-detects as "UJ".

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YES    NO    N/A

A.1.16.3.3 ICSAB Solution

For ICP-MS, are all analyte results in ICSAB within the control limits of 80-120% of the true/established mean value, whichever is greater?

[ ]    —      /  

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79% flag (J) as estimated the associated sample results  $\geq$  MDL. Reject (R) and red-line those all sample detects and non-detects for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only detects ( $\geq$  MDL).

A.1.17    Spiked Sample Recovery: Pre-Digestion/Pre-Distillation)-Form V A  
Note: Not required for Ca, Mg, K, and Na (both matrices); Al and Fe (soil only)

A.1.17.1    Was Matrix Spike analysis performed:

For each matrix type?

[   /   ]    —    —

For each SDG?

[   /   ]    —    —

On one of the SDG samples?

[   /   ]    —    —

For each concentration range (i.e., low, med., high)?

[   /   ]    —    —

For each analytical Method (ICP-AES, ICP-MS, Hg, CN) used?

[   /   ]    —    —

Was a spiked sample prepared and analyzed with the SDG samples?

[   /   ]    —    —

ACTION:

If no for any of the above, flag as estimated (J) all the positive data for which a spiked sample was not analyzed.

NOTE:

If more than one spiked sample were analyzed for one SDG, then qualify the associated data based on the worst spiked sample analysis.

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
A.1.17.2    Was a field blank or PE sample used for the spiked sample analysis?	—	[ <input checked="" type="checkbox"/> ]	—

ACTION:

If yes, flag (J) as estimated positive data of the associated SDG samples for which field blank or PE sample was used for the spiked sample analysis.

A.1.17.3    Circle on each Form VA all spike recoveries that are outside the control limits (75-125%) that have sample concentrations less than four times the added spike concentrations.

Are all recoveries within the control limits when sample concentrations are less than or equal to four times the spike concentrations?

[ ☐ ]    [ ☒ ]    —

NOTE:

Disregard the out of control spike recoveries for analytes whose concentrations are greater than or equal to four times the spike added.

Are results outside the control limits (75-125%) flagged with Lab Qualifier "N" on Form I's and Form VA?

[ ☒ ]    —    —

ACTION:

If no for any of the above, write in the Contract - Problems/Non-Compliance Section of the Data Review Narrative.

A.1.17.4    Aqueous

Are any spike recoveries:

(a) less than 30%?

—    [ ☐ ]    [ ☒ ]

(b) between 30-74%?

—    [ ☐ ]    [ ☒ ]

(c) between 126-150%?

—    [ ☐ ]    [ ☒ ]

(d) greater than 150%?

—    [ ☐ ]    [ ☒ ]

ACTION:

If the matrix spike recovery is less than 30%, reject (R) and red-line all associated aqueous data (detects & non-detects). If between 30-74%, qualify all associated aqueous data  $\geq$  MDL as "J" and non-detects

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YES      NO      N/A

as "UJ". If between 126-150%, flag (J)  
all data  $\geq$  MDL as "J". If greater than 150%,  
reject (R) and red-line all associated data  $\geq$  MDL.

(NOTE: Replace "N" with "J", "R" as appropriate.)

A.1.17.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?

☒      ☐      ☐

(b) between 10-74%?

☐      ☒      ☐

(c) between 126-200%?

☐      ☐      ☐

(d) greater than 200%?

☐      ☒      ☐

ACTION:

If yes for any of the above, proceed  
as follows:

If the matrix spike recovery is less  
than 10%, reject (R) and red-line all  
associated data (detects & non-detects);  
if between 10-74%, qualify all associated  
data  $\geq$  MDL as "J" and non-detects as "UJ";  
if between 126-200%, flag (J) all associated  
data  $\geq$  MDL as "J" If greater than 200%, reject  
(R) and red-line all associated data  $\geq$  MDL.  
(NOTE: Replace "N" with "J" or "R" as appropriate.)

*R non-detects only based  
off professional judgement*

A.1.18 Lab Duplicates) - Form VI

A.1.18.1 Was the lab duplicate analysis performed:

For each SDG?

☒      ☐      ☐

On one of the SDG samples?

☒      ☐      ☐

For each matrix type?

☒      ☐      ☐

For each concentration range  
(low or med.)?

☒      ☐      ☐

For each analytical Method  
(ICP-AES/ICP-MS, Hg, CN) Used?

☒      ☐      ☐

Was a lab duplicate prepared and  
analyzed with the SDG samples?

☒      ☐      ☐

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YES    NO    N/A

ACTION:

If no for any of the above, flag (J) as estimated all the SDG sample results (detects & non-detects) for which the lab duplicate analysis was not performed.

NOTE:

If more than one lab duplicate sample were analyzed for an SDG, then qualify the associated samples based on the worst lab duplicate analysis.

- A.1.18.2    Was a Field Blank or PE sample used for the Lab Duplicate analysis?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag as estimated (J) all SDG sample results (hits & non-detects) for which Field Blank or PE sample was used for duplicate analysis.

- A.1.18.3    Circle on each Form VI all values that are:

RPD > 20%, or

Absolute Difference > CRQL

Are all values within control limits (RPD  $\leq$  20% or absolute difference  $\leq$   $\pm$ CRQL)?

☒ \_\_\_\_\_

If no, are all results outside the control limits flagged with an "\*" (Lab Qualifier) on Form VI and on all Form I's?

☐ \_\_\_\_\_ ☒

ACTION:

If no, write in the Contract-Problems/ Non-Compliance Section of the Data Review Narrative.

NOTE:

The laboratory is not required to report on Form VI the RPD when both values are non-detects.

- A.1.18.4    Aqueous

- A.1.18.4.1    When sample and duplicate values are both  $\geq$  5xCRQL (substitute MDL for CRQL when MDL > CRQL),

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	YES	NO	N/A
is any RPD > 20% but < 100%?	___	[ ]	/
is any RPD ≥ 100%?	___	[ ]	/

ACTION:

If the RPD is > 20% but < 100%, flag (J) as estimated the associated sample data ≥ CRQL. If the RPD is ≥ 100%, reject (R) and red-line the associated sample data ≥ CRQL.

(NOTE: Replace "\*" with "J" or "R" as appropriate.)

A.1.18.4.2 When the sample and/or duplicate value < 5xCRQL (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate values:

> ± CRQL?	___	[ ]	/
> ± 2xCRQL?	___	[ ]	/

ACTION:

If the absolute difference is > CRQL, flag as estimated all the associated sample results ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the absolute difference is > 2xCRQL, reject (R) and red-line all the associated non-detects and detects ≥ MDL but < 5xCRQL.

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is > CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this difference to qualify sample results.

A.1.18.5 Soil/Sediment

A.1.18.5.1 When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),

is any RPD ≥ 35% but < 120%?	___	[ / ]	___
is any RPD ≥ 120%?	___	[ / ]	___

ACTION:

If the RPD is ≥ 35% and < 120%, flag (J) as estimated the associated sample

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YES      NO      N/A

data  $\geq$  CRQL. If the RPD is  $\geq$  120%, reject (R) and red-line the associated sample data  $\geq$  CRQL.

A.1.18.5.2 When the sample and/or duplicate value  $< 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL  $>$  CRQL), is the absolute difference between sample and duplicate:

$> \pm 2 \times \text{CRQL}?$

— [ ☒ ] —

$> \pm 4 \times \text{CRQL}$

— [ ☒ ] —

ACTION:

If the absolute difference is  $> 2 \times \text{CRQL}$ , flag all the associated sample results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  as "J" and non-detects as "UJ". If the absolute difference is  $> 4 \times \text{CRQL}$ , reject (R) and red-line all the associated non-detects and detects  $\geq$  MDL but  $< 5 \times \text{CRQL}$ .

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is  $> \text{CRQL}$  and the other value is non-detect, calculate the absolute difference between the value  $> \text{CRQL}$  and the MDL, and use this difference to qualify sample results.

A.1.19 Field Duplicates

Aqueous Field Duplicates

A.1.19.1 Was an aqueous Field Duplicate pair collected and analyzed?  
(Check Sampling Trip Report)

[ ☐ ] — ☒ —

ACTION:

If yes, prepare a Form (Appendix A.4) for each aqueous Field Duplicate pair. Report the sample and Field Duplicate results on Appendix A.4 from their respective Form I's. Calculate and report RPD on Appendix A.4 when sample and its Field Duplicate values are both  $> 5 \times \text{CRQL}$ . Calculate and report the absolute difference on Appendix A.4 when at least one value (sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the aqueous Field Duplicate analysis in accordance with the

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YES    NO    N/A

QC criteria stated in Sections A.1.19.2 and A.1.19.3.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this the criteria to qualify the results.

A.1.19.2    Circle all values on the Form (Appendix A.4) for Field Duplicates that have:

RPD  $\geq$  20%    or

Difference  $> \pm$  CRQL

When sample and duplicate values are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL),

is any RPD  $\geq$  20%?

—

[ ]

✓

is any RPD  $\geq$  100%?

—

[ ]

✓

ACTION:

If the RPD is >20% but < 100%, flag (J) only the associated sample and its Field Duplicate results  $\geq$  CRQL. If the RPD is  $\geq$  100%, reject (R) and red-line only the associated sample and its Field Duplicate result  $\geq$  CRQL.

A.1.19.3    When the sample and/or duplicate value(s)  $< 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate:

$> \pm$  CRQL?

—

[ ]

✓

$> \pm 2 \times \text{CRQL}$ ?

—

[ ]

✓

ACTION:

If the absolute difference is  $> \text{CRQL}$ , flag detects  $\geq$  MDL but  $< 5 \times \text{CRQL}$  as "J" and non-detects as "UJ". If the difference is  $> 2 \times \text{CRQL}$ , reject (R) and red-line non-detects

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YES    NO    N/A

and results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  of the sample  
and its Field Duplicate.

Soil/Sediment Field Duplicates

- A.1.19.4    Was a soil field duplicate pair  
collected and analyzed?  
(Check Sampling Trip Report)

[ ]    ☒    ☐

ACTION:

If yes, for each soil Field Duplicate  
pair proceed as follows:

Prepare Appendix A.4 for each Field Duplicate  
pair. Report on Appendix A.4 all sample and its  
Field Duplicate results in MG/KG from their  
respective Form I's. Calculate and report RPD when  
sample and its duplicate values are both greater  
than  $5 \times \text{CRQL}$ . Calculate and report the  
absolute difference when at least one value  
(sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the  
Field Duplicate analysis in accordance with the  
QC Criteria stated in Sections A.1.19.5 and A.1.19.6.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when  $\text{MDL} > \text{CRQL}$ .
4. If one value is  $> \text{CRQL}$  and the other  
value is non-detect, calculate the  
absolute difference between the  
value  $> \text{CRQL}$  and the MDL, and apply  
the criteria to qualify the results.

- A.1.19.5    Circle on each Appendix A.4 all  
values that have:

$\text{RPD} \geq 35\%$ , or Difference  $> \pm 2 \times \text{CRQL}$   
When sample and duplicate values  
are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for  
CRQL when  $\text{MDL} > \text{CRQL}$ ),

is any  $\text{RPD} \geq 35\%$  but  $< 120\%$ ?

—    [ ]    ☒

is any  $\text{RPD} \geq 120\%$ ?

—    [ ]    ☒

ACTION:

If the RPD is  $\geq 35\%$  but  $< 120\%$ ,

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flag only the associated sample  
and its Field Duplicate results  
≥ CRQL as "J". If the RPD is ≥ 120%,  
reject (R) and red-line only the sample  
and its Field Duplicate results ≥ CRQL.

A.1.19.6 When the sample and/or duplicate value(s)  
<5xCRQL (substitute MDL for CRQL when MDL > CRQL),  
is the absolute difference between sample  
and Field Duplicate:

> ± 2 x CRQL?

—      [ ]      ☒

> ± 4 x CRQL?

—      [ ]      ☒

ACTION:

If the absolute difference is > 2xCRQL, flag  
Sample and its Field Duplicate results ≥ MDL  
but <5xCRQL as "J" and non-detects as "UJ".  
If the difference is >4xCRQL, reject(R) and  
red-line non-detects and detects ≥ MDL but  
<5xCRQL of the sample and its Field Duplicate.

A.1.20 Laboratory Control Sample (LCS) - Form VII

A.1.20.1 Was one LCS prepared and analyzed for:

Each SDG?

☒      —      —

Each matrix type?

☒      —      —

Each batch samples digested/distilled?  
For each Method(ICP-AES, ICP-MS, Hg, CN)  
used?

☒      —      —  
☒      —      —

Was an LCS prepared and analyzed with  
the samples?

☒      —      —

ACTION:

If no for any of the above, prepare  
Telephone Record Log and contact  
CLP PO or TOPO for submittal of the  
LCS results. Flag (J) as estimated all  
the data for which an LCS was not  
analyzed.

NOTE:

If only one LCS was analyzed for

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YES      NO      N/A

more than 20 samples, then the first  
20 samples analyzed are not flagged(J),  
but all additional samples must be  
qualified (J).

A.1.20.2      Aqueous LCS

Circle on each Form VII the LCS percent  
recoveries outside control limits 80-120%.

NOTE: 1. Use digested ICV as LCS for aqueous mercury  
2. Use distilled ICV as LCS for aqueous cyanide

Is any LCS recovery:

Less than 50%?

_____	[ ]	/
_____	[ ]	/
_____	[ ]	/
_____	[ ]	/

Between 50% and 79%?

Between 121% and 150%?

Greater than 150%?

ACTION:

If the LCS recovery is less than 50%,  
reject (R) and red-line all associated  
sample data (detects & non-detects); for  
a recovery between 50-79%, flag detects  
as "J" all non-detects as "UJ". if the LCS  
recovery is between 121-150%, flag only  
detects as "J". if the recovery is greater  
than 150%, reject (R) and red-line all detects.

A.1.20.3      Solid LCS

If an analyte's MDL is equal to or  
greater than the true value of LCS,  
disregard the "Action" below for that  
analyte even though the LCS is out of  
control limits.

Is the LCS "Found" value greater  
than the Upper Control Limit  
reported on Form VII?

_____	[ ]	_____
-------	-----	-------

ACTION:

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YES    NO    N/A

If yes, flag (J) all the associated  
detects  $\geq$  MDL as estimated (J).

Is the LCS "Found" value lower  
than the Lower Control Limit  
reported on Form VII?

—    [☒]    —

ACTION:

If yes, flag detects as "J" and  
non-detects as "UJ".

A.1.21    ICP-AES/ICP-MS Serial Dilution - Form VIII

NOTE: Serial dilution analysis is required only  
when the initial concentration is equal to or  
greater than 50 x MDL.

A.1.21.1    Was a Serial Dilution analysis  
performed:

For each SDG?

[☒]    —    —

On one of the SDG samples?

[☒]    —    —

For each matrix type?

[☒]    —    —

For each concentration range  
(low or med.)?

[☒]    —    —

Was a Serial Dilution sample  
analyzed with the SDG samples?

[☒]    —    —

ACTION:

If no for any of the above, flag  
as estimated (J) detects  $\geq$  MDL of  
all the SDG samples for which the  
ICP Serial Dilution Analysis was  
not performed.

A.1.21.2    Was a Field Blank or PE sample used  
for the Serial Dilution Analysis?

—    [☒]    —

ACTION:

If yes, flag as estimated (J) detects  
 $\geq$  MDL of all the SDG samples

A.1.21.3    Circle on Form VIII the Percent Differences  
(%D) between sample results and its dilution  
results that are outside the control limits  $\pm 10\%$

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YES    NO    N/A

when initial concentrations  $\geq 50 \times$  MDLs.

Are results outside the control  
limits flagged with an "E" (Lab Qualifier)  
on Form VIII and all Form I's?

☐    ☐    ☒

ACTION:

If no, write in the Contract-Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.21.4    Are any %D values:

> 10%?

☐    ☒    ☐

$\geq 100\%$ ?

☐    ☒    ☐

ACTION:

If the Percent Difference (%D) is  
greater than 10%, flag (J) as estimated  
all associated samples whose raw data  $\geq$  MDL;  
if the %D is  $\geq 100\%$ , reject (R) and red-line  
all associated samples with raw data  $\geq$  MDL.

(NOTE: Replace "E" with "J" or "R" as appropriate.)

A.1.22    Total/Dissolved or Inorganic/Total Analytes

A.1.22.1    Were any analyses performed for  
dissolved as well as total analytes  
on the same sample(s)?

☐    ☒    ☐

Were any analyses performed for  
inorganic as well as total analytes  
on the same sample(s)?

☐    ☒    ☐

ACTION:

If yes, prepare a Form (Appendix A.5)  
to compare the differences between  
dissolved (or inorganic) and total  
analyte concentrations. Compute each  
difference on Appendix A.5 as a percent  
of the total analyte only when both of  
the following conditions are fulfilled:

- (1) The dissolved (or inorganic) concentration  
is greater than total concentration, and
- (2) greater than or equal to  $5 \times$  MDL.

A.1.22.2    Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 20%?

☐    ☐    ☒

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YES    NO    N/A

A.1.22.3    Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 50%?

—    [ ]    /

ACTION:

If the percent difference is greater  
than 20%, flag (J) both dissolved/inorganic  
and total concentrations as estimated. If  
the difference is more than 50%, reject (R)  
and red-line both the values.

A.1.23    Field Blank - Form I

NOTE: Designate "Field Blank" as such on Form I

A.1.23.1    Was a Field/Rinsate Blank collected  
and analyzed with the SDG samples?

[ ]    /    —

If yes, is any Field/Rinsate Blank  
absolute value of an analyte on Form I  
greater than its CRQL (or 2xMDL when MDL > CRQL)?

—    [ ]    /

If yes, circle the Field Blank value  
on Form I that is greater than the  
CRQL, (or 2 x MDL when MDL > CRQL).

Is any Field Blank value greater  
than CRQL also greater than the  
Preparation Blank value?

—    [ ]    /

If yes, is the Field Blank value  
(> CRQL and > the prep. blank value)  
already rejected due to other QC  
criteria?

[ ]    —    /

ACTION:

If the Field Blank value was not rejected,  
reject all associated sample data (except  
the Field Blank results) greater than the  
CRQL but less than the Field Blank value.  
Reject on Form I's the soil sample results  
whose raw values in ug/L in the instrument  
printout are greater than the CRQL but less  
than the Field Blank value in ug/L. Flag as  
"J" detects between the Field Blank value and  
10x Field Blank value. If the sample result  $\geq$  MDL  
but  $\leq$  CRQL, replace it with CRQL-U.

If the Field Blank value is less than the

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YES      NO      N/A

Prep. Blank value, do not qualify the sample results due to the Field Blank criteria.

NOTE:

1. Field Blank result previously rejected due to other criteria cannot be used to qualify field samples.
2. Do not use Rinsate Blank associated with soils to qualify water samples and vice versa.

A.1.24      Verification of Instrumental Parameters - Form IX, XA, XB, XI

A.1.24.1      Is verification report present for:

Method Detection Limits (Form IX-Annually)?	<input checked="" type="checkbox"/>	___	___
ICP-AES Interelement Correction Factors (Form XA & XB -Quarterly)?	<input checked="" type="checkbox"/>	___	___
ICP-AES & ICP-MS Linear Ranges (Form XI-Quarterly)?	<input checked="" type="checkbox"/>	___	___

ACTION:

If no, contact CLP PO/TOPO for submittal from the laboratory.

A.1.24.2      Method Detection Limits - Form IX

A.1.24.2.1 Are MDLs present on Form IX for:

All the analytes?	<input checked="" type="checkbox"/>	___	___
All the instruments used?	<input checked="" type="checkbox"/>	___	___
Digested and undigested samples and Calib.Blanks?	<input checked="" type="checkbox"/>	___	___
ICP-AES and ICP-MS when both instruments are used for the same analyte?	<input type="checkbox"/>	___	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, prepare Telephone Record Log and contact CLP PO/TOPO for submittal of the MDLs from the laboratory. Report to CLP PO and write in the Contract Problems/Non-Compliance Section of the Data Review Narrative if the MDL concentration is not less than ½ CRQL.

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
A.1.24.2.2 Is MDL greater than the CRQL for any analyte?	___	[ <input checked="" type="checkbox"/> ]	___
If yes, is the analyte concentration on Form I greater than 5 x MDL for the sample analyzed on the instrument whose MDL exceeds CRQL?	[ ]	___	/
<u>ACTION:</u> If no, flag as estimated (J) all values less than five times MDL for the analyte whose MDL exceeds the CRQL.			
A.1.24.3 <u>Linear Ranges - Form XI</u>			
A.1.24.3.1 Was any sample result higher than the high linear range for ICP-AES or ICP-MS?	___	[ <input checked="" type="checkbox"/> ]	___
Was any sample result higher than the highest calibration standard for mercury or cyanide?	___	[ ]	/
If yes for any of the above, was the sample diluted to obtain the result reported on Form I?	[ ]	___	/
<u>ACTION:</u> If no, flag (J) as estimated the affected detects ( $\geq$ MDL) reported on Form I.			
A.1.25 <u>ICP-MS Tune Analysis - Form XIV</u>			
A.1.25.1 Was the ICP-MS instrument tuned prior to calibration?	[ ]	___	/
<u>ACTION:</u> If no, reject (R) and red-line all sample data for which tuning was not performed.			
A.1.25.2 Was the tuning solution analyzed or scanned at least five times consecutively?	[ ]	___	/
Were all the required isotopes spanning the analytical range present in the tuning solution?	[ ]	___	/
Was the mass resolution within			

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YES NO N/A

0.1 amu for each isotope in the  
tuning solution?

[ ]

—

✓

Was %RSD less than 5% for each  
isotope of each analyte in the  
tuning solution?

[ ]

—

✓

ACTION:

If no for any of the above, qualify  
all results  $\geq$  MDL associated with that  
Tune as estimated "J", and all non-detects  
associated with that Tune as "UJ".

A.1.26 ICP-MS Internal Standards - Form XV

A.1.26.1 Were the Internal Standards added  
to all the samples and all QC  
samples and calibration standards  
(except the Tuning Solution)?

[ ]

—

✓

Were all the target analyte  
masses bracketed by the masses  
of the five internal standards?

[ ]

—

✓

ACTION:

If none of the Internal Standards was  
added to the samples, reject (R) and  
red-line all the associated sample data  
(detects & non-detects). If internal  
standards were used but did not cover all  
the analyte masses, reject (R) and red-line  
only the analyte results not bracketed by  
the internal standard masses.

A.1.26.2 Was the intensity of an Internal  
Standard in each sample within 60-125%  
of the intensity of the same Internal  
Standard in the calibration blank?

[ ]

—

✓

If no, was the original sample diluted  
two fold, Internal Standard added and the  
sample re-analyzed?

[ ]

—

✓

Was the %RI for the two fold diluted sample  
within the acceptance limits (60-125%)?

[ ]

—

✓

ACTION:

If no for any of the above, flag detects  
as "J" and non-detects "UJ" of all the  
analytes with atomic masses between the

atomic mass of the internal standard lighter

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than the affected internal standard, and the  
atomic mass of the internal standard heavier  
than the affected internal standard.

A.1.27 Percent Solids of Sediments

A.1.27.1 Are percent solids in sediment(s):

< 50%?

\_\_\_\_\_ [ ] \_\_\_\_\_

ACTION:

If yes, qualify as estimated (J) all detects and  
non-detects of a sample that has percent solids  
less than 50% (i.e., moisture content greater than 50%).

NOTE:

Flag(J) only the sample results  
that were not previously flagged  
due to other QC criteria.

Inorganic Data Review Narrative

Case# \_\_\_\_\_ Site: \_\_\_\_\_ Matrix: Soil \_\_\_\_\_  
SDG# \_\_\_\_\_ Lab: \_\_\_\_\_ Water \_\_\_\_\_  
Sampling Team: \_\_\_\_\_ Reviewer: \_\_\_\_\_ Other \_\_\_\_\_

A.2.1 Data Validation Flags:

The following flags may have been applied in red by the data validator and must  
be considered by the data user.

- J - This flag indicates the result qualified as estimated
- R and Red-Line - A red-line drawn through a sample result indicates unusable value.  
The red-lined data are known to contain significant errors based on  
documented information and must not be used by the data user.
- U - This data validation qualifier is applied to sample results  
≥ MDL when associated blank is contaminated
- Fully Usable Data - The results that do not carry "J" or "red-line" are fully  
usable.

A.2.2 Laboratory Qualifiers:

The CLP laboratory applies a contractual qualifier on all

**Site:** Glen Isle  
**Laboratory:** TestAmerica, Inc.  
**Report No.:** 480-73951-2  
**Reviewer:** Christina Rink/Laboratory Data Consultants for RXR Glen Isle Partners  
**Date:** February 10, 2015

**Samples Reviewed and Evaluation Summary**

FIELD ID	LAB ID	FRACTIONS VALIDATED
LT-C-035 (4-6)	480-73951-6	Arsenic
CC-C-022 (0-2)	480-73951-7	Arsenic
CC-C-019 (0-2)	480-73951-8	Arsenic
LT-C-035 (4-6)MS	480-73951-6MS	Arsenic
LT-C-035 (4-6)MSD	480-73951-6MSD	Arsenic

All samples in this SDG underwent SPLP extraction

Associated QC Samples(s):

Field/Trip Blanks: None Associated

Field Duplicate pair: None Associated

The above-listed soil samples were collected on January 7, 2015 through January 9, 2015 and were analyzed for arsenic by SW-846 methods 6010C. The data validation was performed in accordance with the USEPA Region 2 *Standard Operating Procedure for the Evaluation of Metals for the Contract Laboratory Program*, SOP HW-2, Revision 13 (September 2006) and the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011* (January 2010), modified as necessary to accommodate the non-CLP methodologies used.

The inorganic data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness
- Holding Times and Sample Preservation
- Instrument Calibration
- Contract Required Quantitation Limit (CRQL) Standard Recoveries
- Blank Analysis Results
- Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results
- Matrix Spike (MS) Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Laboratory Control Sample (LCS)
- Serial Dilution Results
- Detection Limits Results
- Sample Quantitation Results

### **Overall Evaluation of Data and Potential Usability Issues**

All results are usable as reported.

The validation findings were based on the following information.

### **Data Completeness**

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

### **Holding Times and Sample Preservation**

All criteria were met.

### **Instrument Calibration**

All criteria were met.

### **CRQL Standard Recoveries**

All criteria were met.

### **Blank Results**

No analytes were detected in the laboratory method and instrument blank samples.

No field blanks were identified in this SDG.

### **ICP ICS Results**

All analytes were within control limits in the ICSA and ICSAB analyses.

### **MS/MSD Results**

The laboratory performed MS and MSD analyses on sample LT-C-035 (4-6) for arsenic. All criteria were met.

### **Laboratory Duplicate Results**

Laboratory duplicates were not associated with this sample set. Validation action was not required on this basis.

### **Field Duplicate Results**

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

### **LCS Results**

All criteria were met.

### **Serial Dilution Results**

A serial dilution analysis was performed on sample LT-C-035 (4-6) for arsenic. All criteria were met.

### **Detection Limits Results**

Results were reported which were below the reporting limit (RL) and above the method detection limit (MDL). These results were estimated (J) by the laboratory.

Due to interfering analytes, select samples were analyzed at dilutions. The following table lists the sample dilutions which were performed and the results reported. RLs were elevated accordingly.

Sample	Metal Analysis Reported
LT-C-035 (4-6)	10-fold dilution due to high interfering analytes

### **Sample Quantitation Results**

Calculations were spot-checked; no discrepancies were noted.

## DATA VALIDATION QUALIFIERS

- U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.
- J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified “J” data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The ‘J’ data may be biased high or low or the direction of the bias may be indeterminable.
- UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified “UJ” data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The ‘UJ’ data may be biased low.
- R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 33693B4b

**VALIDATION COMPLETENESS WORKSHEET**

Date: 2/9/15

SDG #: 480-73951-2

Cat B

Page: 1 of 1

Laboratory: Test America, Inc.

Reviewer: a

2nd Reviewer: e

**METHOD:** As (EPA SW 846 Method 6010C)

<sup>SPLP</sup>  
The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	Instrument Calibration	A	
III.	ICP Interference Check Sample (ICS) Analysis	A	
IV.	Laboratory Blanks	A	
V.	Field Blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/D
VII.	Duplicate sample analysis	N	
VIII.	ICP Serial Dilution	A	
IX.	Laboratory control samples	A	LCS
X.	Field Duplicates	N	
XI.	Sample Result Verification	A	MDLL sample < RL: To det.
XII.	Overall Assessment of Data	A	

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank

OTHER:

Samples in this SDG underwent SPLP East extraction

	Client ID	Lab ID	Matrix	Date
1	LT-C-035 (4-6) @10X due to interfering elements	480-73951-6	Soil	01/07/15
2	CC-C-022 (0-2)	480-73951-7	Soil	01/09/15
3	CC-C-019 (0-2)	480-73951-8	Soil	01/09/15
4	LT-C-035 (4-6)MS	480-73951-6MS	Soil	01/07/15
5	LT-C-035 (4-6)MSD	480-73951-6MSD	Soil	01/07/15
6				
7				
8				
9				
10				
11				
12				
13				
14				

Notes:

Samples underwent SPLP extraction

LDC #: 369384b

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: OR  
2nd Reviewer: ✓

**METHOD:** Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV	ICP (Initial calibration)	As	0.37485	0.375	100	100	Y
	ICP/MS (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	As	0.48637	0.5	97	97	Y
	ICP/MS (Continuing calibration)						
	CVAA (Continuing calibration)						

Comments:

LDC #: 3383451

# VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: 6 of 1  
Reviewer: 9  
2nd Reviewer: 2

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,  
Found = SSR (spiked sample result) - SR (sample result).  
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)  
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units) <i>mg/L</i>	True / D / SDR (units) <i>mg/L</i>	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
ICSB	ICP interference check	As	0.103 <i>mg/L</i>	0.1 <i>mg/L</i>	103	63	Y
LCS	Laboratory control sample		0.937	1	94	94	
4	Matrix spike		(SSR-SR) 0.9882	1.00	99	99	
4/5	Duplicate		1.1836	1.1839	0	0	
1	ICP serial dilution		0.20	ND	NC	NC	

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC #: 336935415

## VALIDATION FINDINGS WORKSHEET

### Sample Calculation Verification

Page: 1 of 1

Reviewer: OL

2nd reviewer:                     

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

~~Y~~ N N/A Have results been reported and calculated correctly?

Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?

Y/N N/A Are all detection limits below the CRDL?

Detected analyte results for As were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(\text{RD})(\text{FV})(\text{Dil})}{(\text{In. Vol.})}$$

**Recalculation:**

RD	=	Raw data concentration
FV	=	Final volume (ml)
In. Vol.	=	Initial volume (ml) or weight (G)
Dil	=	Dilution factor

Recalculation:

~~MB~~  $0.01954 \text{ mg/L} (10) = 0.1954 \text{ mg/L}$

[illegible]

Note: \_\_\_\_\_

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YES      NO      N/A

A.1.1 Contract Compliance Screening Report

Present?

☐      ☐      ☒

ACTION:      If no, contact RSCC/PO.

A.1.2 Record of Communication (from RSCC)

Present?

☐      ☐      ☒

ACTION:      If no, request from the RSCC.

A.1.3 Sampling Trip Report

Present and complete?

☐      ☐      ☒

ACTION:      If no, contact RSCC/PO.

A.1.4 Chain of Custody/Sample Traffic Report

Present?

☒      ☐      ☐

Legible?

☒      ☐      ☐

Signature of sample custodian  
present?

☒      ☐      ☐

ACTION: If no, contact RSCC/WAM/PO.

A.1.5 Cover Page

Present?

☒      ☐      ☐

Is the Cover Page properly filled in  
and the verbatim signed by the lab  
manager or the manager's designee?

☒      ☐      ☐

Do the sample identification numbers  
on the Cover Page agree with sample  
Identification numbers on:

(a) Traffic Report Sheet?

☐      ☐      ☒

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(b) Form I's?

YES    NO    N/A

☒    ☐    ☐

Is the number of samples on the Cover  
Page the same as the number of  
samples on the Traffic Report sheet  
and the Regional Record of Communication  
(ROC) for the data Case?

☐    ☐    ☒

**ACTION:**

If no for any of the above, prepare  
Telephone Record Log and contact RSCC/PO  
for re-submittal of the corrected Cover Page  
from the laboratory.

**A.1.6 SDG Narrative, DC-1 & DC-2 Form**

Is the SDG Narrative present?

☒    ☐    ☐

Is Sample Log-In Sheet(Form DC-1)  
present and complete?

☐    ☐    ☒

Is Complete SDG Inventory Sheet(Form DC-2)  
present and complete?

☐    ☐    ☒

**ACTION:**

If no, write in the Contract-Problems/  
Non-Compliance Section of the Data Review  
Narrative.

**A.1.7 Form I to XV**

A.1.7.1    Are all the Form I through Form XV  
labeled with:

Laboratory Name?

☒    ☐    ☐

Laboratory Code?

☐    ☒    ☐

RAS/Non-RAS Case No.?

☒    ☐    ☐

SDG No.?

☒    ☐    ☐

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YES      NO      N/A

Contract No.?

☐      ☐      ☒

**ACTION:**

If no for any of the above, note under Contract Problem/Non-Compliance Section of the "Data Review Narrative" and contact PO for corrected Form(s) from the laboratory.

A.1.7.2

After comparing values on Forms I-IX against the raw data, do any computation/transcription errors exceed 10% of the reported values on the Forms for:

(a) all analytes analyzed by ICP-AES?

☐      ☒      ☐

(b) all analytes analyzed by ICP-MS?

☐      ☐      ☒

(c) Mercury?

☐      ☐      ☒

(d) Cyanide?

☐      ☐      ☒

**ACTION:**

If yes, prepare Telephone Record Log and contact CLP PO/TOPO for the corrected data from the laboratory.

**A.1.8 Raw Data**

Data shall not be validated without the hard/electronic copies of the associated raw data for samples and QC samples.

**A.1.8.1      Digestion/Distillation Log**

Digestion Log for ICP-AES  
(Form XII) present?

☒      ☐      ☐

Digestion Log for ICP-MS  
(Form XII) present?

☐      ☐      ☒

Digestion Log for mercury  
(Form XII) present?

☐      ☐      ☒

Distillation Log for cyanide  
(Form XII) present?

☐      ☐      ☒

Are pH values for metals and

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YES    NO    N/A

cyanide reported for each  
aqueous sample?

☐    ☒    ☐

Are percent solids calculations  
present for soils/sediments?

☒    ☐    ☐

Are preparation dates present on the  
sample preparation logs/bench sheets?

☒    ☐    ☐

**NOTE:**

Digestion/Distillation log must include weights, volumes,  
and dilutions used to obtain the reported results.

A.1.8.2    Is the analytical instrument  
real-time    printouts present for:

ICP-AES?

☒    ☐    ☐

ICP-MS?

☐    ☐    ☒

Mercury?

☐    ☐    ☒

Cyanide?

☐    ☐    ☒

Are all laboratory bench sheets  
and instrument raw data printouts  
necessary to support all sample  
analyses and QC operations:

Legible?

☒    ☐    ☐

Properly labeled?

☒    ☐    ☐

Are all field samples, QC samples  
and field QC samples present on:

Digestion/Distillation log?

☒    ☐    ☐

Instrument Printouts?

☒    ☐    ☐

**ACTION:**

If no for any of the above questions in  
Section A.1.8.1 and Section A.1.8.2, write  
Telephone Record Log and contact TOPO/PO  
for re-submittal from the laboratory.

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YES      NO      N/A

**A.1.9 Technical Holding Times:** (Aqueous and soil samples)

(Examine sample Traffic Reports and digestion/distillation logs to determine the holding time from the sample collection date to the sample preparation date.)

A.1.9.1 Cyanide distillation(14 days)exceeded?      ☐ ☒

Mercury analysis(28 days) exceeded?      ☐ ☒

Other Metals analysis(180 days)exceeded?      ☐ ☒

**ACTION:**

If yes, reject (R) and red-line non-detects and flag as estimated (J)results  $\geq$  MDL even if sample(s) was preserved properly.

**NOTE:**

In addition to qualifying the data, a list of all samples and analytes which exceeded the holding times must be prepared. Report for each sample the number of days that were exceeded. (Subtract the sample collection date from the sample preparation date). Attach this list to the data review narrative.

A.1.9.2 Is pH of aqueous samples for:

Metals Analysis  $\leq 2$ ?      ☐ ☒

Cyanide Analysis  $\geq 12$ ?      ☐ ☒

**ACTION:**

If no for any of the above, flag non-detects as "R" and detects as "J".

A.1.9.3 Is the cooler temperature  $\leq 10$  C°?      ☒ ☐

**ACTION:**

If cooler temperature is  $>10$ °C , flag non-detects as "UJ" and detects as "J".

**A.1.10 Final Data Correctness - Form I**

A.1.10.1 Are Form I's for all samples

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YES    NO    N/A

present and complete?

☒    ☐    ☐

**ACTION:**

If no, prepare Telephone Record  
Log and contact CLP PO/TOPO for  
submittal from the laboratory.

- A.1.10.2    Verify there are no calculation and transcription errors in the results reported on Form I's. Circle on each Form I all results that are incorrect.

Is the calculation error less than 10% of the correct result?

☒    ☐    ☐

Are results on Form I's reported in correct units (ug/L for aqueous and MG/KG for soils)?

☒    ☐    ☐

Are results on Form I'S reported by    correct significant figures?

☒    ☐    ☐

Are soil sample results on Form I's corrected for percent solids?

☒    ☐    ☐

Are all "less than MDL" values reported by the CRQLs and coded with "U"?

☒    ☐    ☐

Are values less than the CRQLs but greater than or equal to the MDLs flagged with "J"?

☒    ☐    ☐

Are appropriate contractual quality control and Method qualifiers used?

☒    ☐    ☐

**ACTION:**

If no for any of the above questions, prepare Telephone Record Log, and contact CLP PO/TOPO for corrected data.

- A.1.10.3    Do EPA sample identification numbers and the corresponding laboratory sample identification numbers match on the Cover Page, Form I's and in the raw data?

☒    ☐    ☐

Was a brief physical description

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YES      NO      N/A

of the samples before and after  
digestion given on the Form I's?

[ ]

☒

—

Was any sample result outside the  
mercury/cyanide calibration range  
or the ICP-AES/ICP-MS linear range  
diluted and noted on the Form I?

[ ]

—

☒

**ACTION:**

If no for any of the above, note under  
the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative.

**A.1.11 Initial Calibration**

A.1.11.1      Is a record of at least 2 point  
(A blank and a standard)calibration  
present for ICP-AES analysis?

☒

—

—

Is a record of at least 2 point  
(a blank and a standard)calibration  
present for ICP-MS analysis?

[ ]

—

☒

Is a record of at least 5 point calibration  
(a blank & 4 standards)present for Hg analysis?

[ ]

—

☒

Is a record of at least 4 point calibration  
(a blank & 4 standards)present for cyanide?

[ ]

—

☒

**ACTION:**

If incomplete or no initial calibration  
was performed, reject (R) and red-line  
the associated data (detects & non-detects).

Is one initial calibration standard  
at the CRQL level for cyanide and  
mercury?

[ ]

—

☒

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.11.2      Is the curve correlation  
coefficient  $\geq 0.995$  for:

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
Mercury Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cyanide Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICP-AES (more than 2 point Calib.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP-MS (more than 2 point calib.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no, qualify the associated sample results  $\geq$  MDL as estimated "J" and non-detects as "UJ".

NOTE:

The correlation coefficient shall be calculated by the data validator using standard concentrations and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.12    Initial and Continuing Calibration Verification- Form IIA

A.1.12.1    Present and complete for every metal and cyanide?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Present and complete for ICP-AES and ICP-MS when both these methods were used for the same analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, prepare a Telephone Record Log and contact PO/TOPO for re-submittal from the laboratory.

A.1.12.2    Was a Continuing Calibration Verification performed every 10 samples or every 2 hours whichever is more frequent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
---	-------------------------------------	--------------------------	--------------------------

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.12.3    Was an ICV or a mid-range standard distilled and analyzed with each batch of cyanide samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	--------------------------	-------------------------------------

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YES    NO    N/A

ACTION:

If no for any of the above, write  
in the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative and  
qualify results  $\geq$  MDL as estimated (J).

- A.1.12.2    Circle on each Form IIA all percent recoveries  
that are outside the contract windows.

Are ICV/CCVs within control limits for:

Metals - 90-110%R?

[ ☒ ]    ☐    ☐

Hg - 80-120%R?

[ ☐ ]    ☐    [ ☒ ]

Cyanide - 85-115%R?

[ ☐ ]    ☐    [ ☒ ]

ACTION:

If no, qualify all samples between a previous technically acceptable CCV  
standard and a subsequent technically acceptable CCV standard as  
follows as follows:

Qualify as estimated (J) all detects and non-detects,  
if the ICV/CCV %R is between 75-89%(65-79% for Hg; 70-84% for CN).  
Qualify only positive results( $\geq$  MDL) as "J" if the ICV/CCV %R is  
between 111-125%(121-135% for Hg; 116-130% for CN). Reject (R) and  
red-line only  
detects if the recovery is greater than 125% (135% for Hg; 130% for  
CN). Reject (R) and red-line all associated results (hits and non-  
detects) if the recovery is less than 75%(65% for Hg; 70% for CN).

NOTE:

For ICV that does not fall within the acceptance limits,  
qualify all samples reported from the analytical run.

- A.1.12.3    Was the distilled ICV or mid-range  
standard for cyanide within acceptance  
limits (85-115%)?

[ ☐ ]    ☐    [ ☒ ]

ACTION:

If no, Qualify all cyanide results  $\geq$  MDL as "J".

A.1.13 CRQL Standard Analysis - Form IIB

- A.1.13.1    For each ICP-AES run, was a CRI

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(CRQL or MDL when MDL > CRQL)  
standard analyzed?

(Note: CRI is not required for Al, Ba,  
Ca, Fe, Mg, Na and K.)

YES NO N/A

☒ ☐ ☐

For each ICP-MS run, was a CRI  
(CRQL or MDL when MDL > CRQL) standard  
analyzed for each mass/isotope used  
for the analysis?

☐ ☐ ☒

For each mercury run, was a CRQL  
standard analyzed?

☐ ☐ ☒

For each cyanide run, was a CRQL  
standard analyzed?

☐ ☐ ☒

**ACTION:**

If no for any of the above, write  
this deficiency in the Contract Problems/  
Non-Compliance Section of the Data Review  
Narrative, inform CLP PO and flag results  
in the affected ranges (detects <2xCRQL) as J  
and non-detects UJ.

The affected ranges are:

ICP-AES Analysis - \*True Value  $\pm$  CRQL

ICP-MS Analysis - \*True Value  $\pm$  CRQL

Mercury Analysis - \*True Value  $\pm$  CRQL

Cyanide Analysis - \*True Value  $\pm$  CRQL

\* True value of the CRQL Standard

A.1.13.2 Was a CRQL standard analyzed after the  
ICV/ICB, before the final CCV/CCB and  
once every 20 analytical samples in  
the analytical run for each analysis?

☐ ☒ ☐

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the  
"Data Review Narrative".

A.1.13.3 Circle on each Form IIB all percent  
recoveries that are outside the  
acceptance windows.

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
Is the CRQL standard within control limits for:			
Metals(ICP-AES/ICP-MS)- 70 - 130%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mercury- 70 - 130%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cyanide - 70 - 130%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**ACTION:**

If no, flag detects <2xCRQL as "J" and non-detects as "UJ" if the CRQL standard recovery is between 50-69%. Flag(J) only detects <2xCRQL if the recovery is between 131% and ≤180%. If the recovery is less than 150%, reject(R) and red-line non-detects and detects < 2xCRQL, and flag (J) detects between 2xCRQL and ICV/CCV. Reject and red-line only detects <2xCRQL and flag (J) detects ≥ 2xCRQL but < ICV/CCV if the recovery is > 180%.

**NOTE:**

1. Qualify all field samples analyzed between a previous technically acceptable analysis of the CRQL standard and a subsequent acceptable analysis of the CRQL standard
2. Flag (J) or reject (R) only the final sample results on Form I's when Sample raw data are within the affected ranges and the CRQL standard is outside the acceptance windows.
3. The samples and the CRQL standard must be analyzed in the same analytical run.

**A.1.14 Initial and Continuing Calibration Blanks - Form III**

A.1.14.1	Present and complete for all the instruments used for the metals and cyanide analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Was an initial Calibration Blank analyzed after ICV?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Was a continuing Calibration Blank analyzed after every CCV and every 10 samples or every 2 hours, whichever is more frequent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Were the ICB & CCB values ≥ MDL but < CRQL reported on Form III and flagged "J" by			

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YES      NO      N/A

using MDLs from direct analysis(Preparation Method "NP1")?

[✓]

(Check Form III against the raw data)

ACTION:

If no, inform CLP PO/TOPO and make a note in the Contract-Problems/Non-Compliance Section of the "Data Review Narrative".

A.1.14.2 Circle with red pencil on each Form III all Calib. Blank values that are:

≥ MDL but ≤ CRQL

> CRQL

A.1.14.2.1 When MDL < CRQL, is any Calib. Blank value ≥ MDL but ≤ CRQL?

\_\_\_\_ [✓] \_\_\_\_

ACTION:

If yes, change sample results ≥ MDL but ≤ CRQL to the CRQL with a "U".  
Do not qualify non-detects.

A.1.14.2.2 When MDL < CRQL, is any Calib. Blank value > CRQL?

\_\_\_\_ [✓] \_\_\_\_

ACTION:

If yes, reject (R) and red line the associated sample results > CRQL but < ICB/CCB Blank Result. Flag as "J" detects > ICB/CCB blank value but < 10xICB/CCB value. Change the sample results ≥ MDL but ≤ the CRQL to CRQL with a "U".

A.1.14.2.3 Is any Calibration Blank value below the negative CRQL?

\_\_\_\_ [✓] \_\_\_\_

ACTION:

If yes, flag (J) as estimated all associated sample results ≥ CRQL but < 10xCRQL.

NOTE:

1. For ICB that does not meet the technical QC Criteria, apply the action to all samples

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YES    NO    N/A

reported from the analytical run.

2. For CCBs that do not meet the technical QC criteria, apply the action to all samples analyzed between a previous technically acceptable analysis of CCB and a subsequent technically acceptable analysis of the CCB in the analytical run.,

A.1.15    Preparation Blank - FORM III

NOTE: The Preparation Blank for mercury is the same as the calibration blank.

A.1.15.1    Was one Preparation Blank prepared with and analyzed for:

Each Sample Delivery Group (SDG)?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

Each batch of the SDG samples digested/distilled?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

Each matrix type?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

All instruments used for metals and cyanide analyses?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

ACTION:

If no for any of the above, flag as estimated (J) all the associated positive data  $< 10 \times \text{MDL}$  for which the Preparation Blank was not analyzed.

NOTE:

If only one blank was analyzed for more than 20 samples, then the first 20 samples analyzed are not estimated (J), but all additional samples must be qualified (J).

A.1.15.2    Circle with red pencil on each Form III all Prep. Blank values that are:

$\geq \text{MDL}$  but  $\leq \text{CRQL}$ , and

$> \text{CRQL}$

A.1.15.2.1    When  $\text{MDL} < \text{CRQL}$ , is any preparation blank value  $\geq \text{MDL}$  but  $\leq \text{CRQL}$ ?

\_\_\_\_\_ [ ☒ ] \_\_\_\_\_

ACTION:

If yes, change sample result  $\geq \text{MDL}$

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YES    NO    N/A

but  $\leq$  CRQL to CRQL with a "U".

A.1.15.2.2 When the MDL  $\leq$  CRQL, is any Preparation Blank value greater than its CRQL?

—    [☒]    —

If yes, is the Prep. Blank value greater than the value of the associated Field Blank collected and analyzed with the SDG samples?

—    [☐]    ☒

If yes, is the lowest concentration of that analyte in the associated samples less than 10 times the Preparation Blank value?

—    [☐]    ☒

ACTION:

If yes, reject (R) and red-line all associated sample results greater than the CRQL but less than the Prep.Blank value. Flag as "J" detects > Prep. Blank value but <10xPrep.Blank. If the sample result  $\geq$  MDL but  $\leq$  CRQL, replace it with CRQL-U.

If the Prep. Blank value is less than the same analyte value in the Field Blank, do not qualify the sample results due to the Prep. Blank criteria.

NOTE:

Convert soil sample result to mg/Kg on wet weight basis to compare with the soil Prep. Blank result on Form III.

A.1.15.2.3 Is the Prep. Blank concentration below the negative CRQL?

—    [☒]    —

ACTION:

If yes, flag (J) all associated sample results less than 10xCRQL. Qualify non-detects as estimated (UJ).

A.1.15.2.4 When the MDL is greater than the CRQL, is the preparation blank concentration on Form III greater than two times the MDL?

—    [☐]    ☒

ACTION:

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YES    NO    N/A

If yes, reject (R) and red-line all positive sample results with sample raw data less than 10 times the Preparation Blank value.

A.1.16    ICP-AES/ICP-MS Interference Check Sample (ICS) - Form IV

NOTE: Not required for CN, Hg, Al, Ca, Fe and Mg.

A.1.16.1    Present and complete?

[☒]    \_\_\_\_\_    \_\_\_\_\_

Was ICS analyzed at the beginning and end of each analytical run, and once for every 20 analytical samples?

[☐]    ☒    \_\_\_\_\_

Was ICS analyzed at the beginning of the ICP-MS analytical run?

[☒]    \_\_\_\_\_    \_\_\_\_\_

ACTION:

If no, flag as estimated (J) all sample results.

A.1.16.2    ICP-AES Method

A.1.16.2.1    ICSA Solution:

For ICP-AES, are the ICSA "Found" analyte values within the control limits  $\pm$  of CRQL of the true/established mean value?

[☒]    \_\_\_\_\_    \_\_\_\_\_

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSA Solution on Form IV?

[☐]    \_\_\_\_\_    ☒

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated only sample results  $\geq$ MDL

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YES    NO    N/A

for which the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag non-detects as "UJ" and detects as "J".

A.1.16.2.3 ICSAB Solution

For ICP-AES, are all analyte results in ICSAB within the control limits of 80-120 of the true/established mean value?

☒    ☐    ☐

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSAB Solution on Form IV?

☒    ☐    ☐

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79%, qualify sample results  $\geq$  MDL as "J" and non-detects as "UJ". Reject (R) and red-line all sample results (detects & non-detects) for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only positive results.

A.1.16.3 ICP-MS Method

A.1.16.3.1 ICSA Solution:

For ICP-MS, are the ICSA "Found" analyte values within the control limits of  $\pm$ CRQL of the true/established mean value?

☐    ☐    ☒

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated only sample results  $\geq$  MDL if the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag the associated sample detects as "J" and non-detects as "UJ".

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A.1.16.3.3 ICSAB Solution

For ICP-MS, are all analyte results in ICSAB within the control limits of 80-120% of the true/established mean value, whichever is greater?

[ ]      —        /  

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79% flag (J) as estimated the associated sample results  $\geq$  MDL. Reject (R) and red-line those all sample detects and non-detects for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only detects ( $\geq$  MDL).

A.1.17      Spiked Sample Recovery: Pre-Digestion/Pre-Distillation)-Form V A  
Note: Not required for Ca, Mg, K, and Na (both matrices); Al and Fe (soil only)

A.1.17.1      Was Matrix Spike analysis performed:

For each matrix type?

[ / ]      —      —

For each SDG?

[ / ]      —      —

On one of the SDG samples?

[ / ]      —      —

For each concentration range (i.e., low, med., high)?

[ / ]      —      —

For each analytical Method (ICP-AES, ICP-MS, Hg, CN) used?

[ / ]      —      —

Was a spiked sample prepared and analyzed with the SDG samples?

[ / ]      —      —

ACTION:

If no for any of the above, flag as estimated (J) all the positive data for which a spiked sample was not analyzed.

NOTE:

If more than one spiked sample were analyzed for one SDG, then qualify the associated data based on the worst spiked sample analysis.

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	YES	NO	N/A
A.1.17.2 Was a field blank or PE sample used for the spiked sample analysis?	—	<input checked="" type="checkbox"/>	—

ACTION:

If yes, flag (J) as estimated positive data of the associated SDG samples for which field blank or PE sample was used for the spiked sample analysis.

A.1.17.3 Circle on each Form VA all spike recoveries that are outside the control limits (75-125%) that have sample concentrations less than four times the added spike concentrations.

Are all recoveries within the control limits when sample concentrations are less than or equal to four times the spike concentrations?

<input checked="" type="checkbox"/>	—	—
-------------------------------------	---	---

NOTE:

Disregard the out of control spike recoveries for analytes whose concentrations are greater than or equal to four times the spike added.

Are results outside the control limits (75-125%) flagged with Lab Qualifier "N" on Form I's and Form VA?

<input checked="" type="checkbox"/>	—	—
-------------------------------------	---	---

ACTION:

If no for any of the above, write in the Contract - Problems/Non-Compliance Section of the Data Review Narrative.

A.1.17.4 Aqueous

Are any spike recoveries:

(a) less than 30%?

—	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	-------------------------------------

(b) between 30-74%?

—	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	-------------------------------------

(c) between 126-150%?

—	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	-------------------------------------

(d) greater than 150%?

—	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	-------------------------------------

ACTION:

If the matrix spike recovery is less than 30%, reject (R) and red-line all associated aqueous data (detects & non-detects). If between 30-74%, qualify all associated aqueous data  $\geq$  MDL as "J" and non-detects

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YES    NO    N/A

as "UJ". If between 126-150%, flag (J)  
all data  $\geq$  MDL as "J". If greater than 150%,  
reject (R) and red-line all associated data  $\geq$  MDL.

(NOTE: Replace "N" with "J", "R" as appropriate.)

A.1.17.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?

— ☒ —

(b) between 10-74%?

— ☒ —

(c) between 126-200%?

— ☒ —

(d) greater than 200%?

— ☒ —

ACTION:

If yes for any of the above, proceed  
as follows:

If the matrix spike recovery is less  
than 10%, reject (R) and red-line all  
associated data (detects & non-detects);  
if between 10-74%, qualify all associated  
data  $\geq$  MDL as "J" and non-detects as "UJ";  
if between 126-200%, flag (J) all associated  
data  $\geq$  MDL as "J" If greater than 200%, reject  
(R) and red-line all associated data  $\geq$  MDL.  
(NOTE: Replace "N" with "J" or "R" as appropriate.)

A.1.18 Lab Duplicates) - Form VI

A.1.18.1 Was the lab duplicate analysis performed:

For each SDG?

☒ — —

On one of the SDG samples?

☒ — —

For each matrix type?

☒ — —

For each concentration range  
(low or med.)?

☒ — —

For each analytical Method  
(ICP-AES/ICP-MS, Hg, CN) Used?

☒ — —

Was a lab duplicate prepared and  
analyzed with the SDG samples?

☒ — —

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YES    NO    N/A

ACTION:

If no for any of the above, flag (J) as estimated all the SDG sample results (detects & non-detects) for which the lab duplicate analysis was not performed.

NOTE:

If more than one lab duplicate sample were analyzed for an SDG, then qualify the associated samples based on the worst lab duplicate analysis.

- A.1.18.2    Was a Field Blank or PE sample used for the Lab Duplicate analysis?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag as estimated (J) all SDG sample results (hits & non-detects) for which Field Blank or PE sample was used for duplicate analysis.

- A.1.18.3    Circle on each Form VI all values that are:

RPD > 20%, or

Absolute Difference > CRQL

Are all values within control limits (RPD  $\leq$  20% or absolute difference  $\leq$   $\pm$ CRQL)?

☒ \_\_\_\_\_

If no, are all results outside the control limits flagged with an "\*" (Lab Qualifier) on Form VI and on all Form I's?

☐ \_\_\_\_\_ ☒

ACTION:

If no, write in the Contract-Problems/ Non-Compliance Section of the Data Review Narrative.

NOTE:

The laboratory is not required to report on Form VI the RPD when both values are non-detects.

- A.1.18.4    Aqueous

- A.1.18.4.1    When sample and duplicate values are both  $\geq$  5xCRQL (substitute MDL for CRQL when MDL > CRQL),

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is any RPD > 20% but < 100%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
is any RPD ≥ 100%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If the RPD is > 20% but < 100%, flag (J) as estimated the associated sample data ≥ CRQL. If the RPD is ≥ 100%, reject (R) and red-line the associated sample data ≥ CRQL.

(NOTE: Replace "\*" with "J" or "R" as appropriate.)

A.1.18.4.2 When the sample and/or duplicate value < 5xCRQL (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate values:

> ± CRQL?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
> ± 2xCRQL?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If the absolute difference is > CRQL, flag as estimated all the associated sample results ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the absolute difference is > 2xCRQL, reject (R) and red-line all the associated non-detects and detects ≥ MDL but < 5xCRQL.

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is > CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this difference to qualify sample results.

A.1.18.5 Soil/Sediment

A.1.18.5.1 When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),

is any RPD ≥ 35% but < 120%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
is any RPD ≥ 120%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ACTION:

If the RPD is ≥ 35% and < 120%, flag (J) as estimated the associated sample

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YES    NO    N/A

data  $\geq$  CRQL. If the RPD is  $\geq$  120%, reject (R) and red-line the associated sample data  $\geq$  CRQL.

A.1.18.5.2 When the sample and/or duplicate value  $< 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL  $>$  CRQL), is the absolute difference between sample and duplicate:

$> \pm 2 \times \text{CRQL}?$

—    ☒    —

$> \pm 4 \times \text{CRQL}$

—    ☒    —

ACTION:

If the absolute difference is  $> 2 \times \text{CRQL}$ , flag all the associated sample results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  as "J" and non-detects as "UJ". If the absolute difference is  $> 4 \times \text{CRQL}$ , reject (R) and red-line all the associated non-detects and detects  $\geq$  MDL but  $< 5 \times \text{CRQL}$ .

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is  $> \text{CRQL}$  and the other value is non-detect, calculate the absolute difference between the value  $> \text{CRQL}$  and the MDL, and use this difference to qualify sample results.

A.1.19    Field Duplicates

Aqueous Field Duplicates

A.1.19.1 Was an aqueous Field Duplicate pair collected and analyzed?  
(Check Sampling Trip Report)

[ ]    —    ☒

ACTION:

If yes, prepare a Form (Appendix A.4) for each aqueous Field Duplicate pair. Report the sample and Field Duplicate results on Appendix A.4 from their respective Form I's. Calculate and report RPD on Appendix A.4 when sample and its Field Duplicate values are both  $> 5 \times \text{CRQL}$ . Calculate and report the absolute difference on Appendix A.4 when at least one value (sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the aqueous Field Duplicate analysis in accordance with the

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YES    NO    N/A

QC criteria stated in Sections A.1.19.2 and A.1.19.3.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this the criteria to qualify the results.

A.1.19.2    Circle all values on the Form (Appendix A.4) for Field Duplicates that have:

RPD  $\geq$  20%    or

Difference  $> \pm$  CRQL

When sample and duplicate values are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL),

is any RPD  $\geq$  20%?

\_\_\_    [ ]    ☒

is any RPD  $\geq$  100%?

\_\_\_    [ ]    ☒

ACTION:

If the RPD is >20% but < 100%, flag (J) only the associated sample and its Field Duplicate results  $\geq$  CRQL. If the RPD is  $\geq$  100%, reject (R) and red-line only the associated sample and its Field Duplicate result  $\geq$  CRQL.

A.1.19.3    When the sample and/or duplicate value(s)  $< 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate:

$> \pm$  CRQL?

\_\_\_    [ ]    ☒

$> \pm 2 \times \text{CRQL}$ ?

\_\_\_    [ ]    ☒

ACTION:

If the absolute difference is > CRQL, flag detects  $\geq$  MDL but <  $5 \times \text{CRQL}$  as "J" and non-detects as "UJ". If the difference is  $> 2 \times \text{CRQL}$ , reject (R) and red-line non-detects

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YES    NO    N/A

and results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  of the sample  
and its Field Duplicate.

Soil/Sediment Field Duplicates

- A.1.19.4    Was a soil field duplicate pair  
collected and analyzed?  
(Check Sampling Trip Report)

[ ]          

ACTION:

If yes, for each soil Field Duplicate  
pair proceed as follows:

Prepare Appendix A.4 for each Field Duplicate  
pair. Report on Appendix A.4 all sample and its  
Field Duplicate results in MG/KG from their  
respective Form I's. Calculate and report RPD when  
sample and its duplicate values are both greater  
than  $5 \times \text{CRQL}$ . Calculate and report the  
absolute difference when at least one value  
(sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the  
Field Duplicate analysis in accordance with the  
QC Criteria stated in Sections A.1.19.5 and A.1.19.6.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when  $\text{MDL} > \text{CRQL}$ .
4. If one value is  $> \text{CRQL}$  and the other  
value is non-detect, calculate the  
absolute difference between the  
value  $> \text{CRQL}$  and the MDL, and apply  
the criteria to qualify the results.

- A.1.19.5    Circle on each Appendix A.4 all  
values that have:

$\text{RPD} \geq 35\%$ , or Difference  $> \pm 2 \times \text{CRQL}$   
When sample and duplicate values  
are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for  
CRQL when  $\text{MDL} > \text{CRQL}$ ),

is any  $\text{RPD} \geq 35\%$  but  $< 120\%$ ?

—    [ ]          

is any  $\text{RPD} \geq 120\%$ ?

—    [ ]          

ACTION:

If the RPD is  $\geq 35\%$  but  $< 120\%$ ,

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flag only the associated sample  
and its Field Duplicate results  
≥ CRQL as "J". If the RPD is ≥ 120%,  
reject (R) and red-line only the sample  
and its Field Duplicate results ≥ CRQL.

A.1.19.6 When the sample and/or duplicate value(s)  
<5xCRQL (substitute MDL for CRQL when MDL > CRQL),  
is the absolute difference between sample  
and Field Duplicate:

> ± 2 x CRQL?

—      [ ]        /  

> ± 4 x CRQL?

—      [ ]        /  

ACTION:

If the absolute difference is > 2xCRQL, flag  
Sample and its Field Duplicate results ≥ MDL  
but <5xCRQL as "J" and non-detects as "UJ".  
If the difference is >4xCRQL, reject (R) and  
red-line non-detects and detects ≥ MDL but  
<5xCRQL of the sample and its Field Duplicate.

A.1.20 Laboratory Control Sample (LCS) - Form VII

A.1.20.1 Was one LCS prepared and analyzed for:

Each SDG?

[   /   ]      —      —

Each matrix type?

[   /   ]      —      —

Each batch samples digested/distilled?  
For each Method (ICP-AES, ICP-MS, Hg, CN)  
used?

[   /   ]      —      —

Was an LCS prepared and analyzed with  
the samples?

[   /   ]      —      —

ACTION:

If no for any of the above, prepare  
Telephone Record Log and contact  
CLP PO or TOPO for submittal of the  
LCS results. Flag (J) as estimated all  
the data for which an LCS was not  
analyzed.

NOTE:

If only one LCS was analyzed for

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YES    NO    N/A

more than 20 samples, then the first  
20 samples analyzed are not flagged(J),  
but all additional samples must be  
qualified (J).

A.1.20.2    Aqueous LCS

Circle on each Form VII the LCS percent  
recoveries outside control limits 80-120%.

NOTE: 1.Use digested ICV as LCS for aqueous mercury  
2.Use distilled ICV as LCS for aqueous cyanide

Is any LCS recovery:

Less than 50%?

—    [ ]    ☒

Between 50% and 79%?

—    [ ]    ☒

Between 121% and 150%?

—    [ ]    ☒

Greater than 150%?

—    [ ]    ☒

ACTION:

If the LCS recovery is less than 50%,  
reject (R) and red-line all associated  
sample data (detects & non-detects); for  
a recovery between 50-79%, flag detects  
as "J" all non-detects as "UJ". if the LCS  
recovery is between 121-150%, flag only  
detects as "J". if the recovery is greater  
than 150%, reject (R) and red-line all detects.

A.1.20.3    Solid LCS

If an analyte's MDL is equal to or  
greater than the true value of LCS,  
disregard the "Action" below for that  
analyte even though the LCS is out of  
control limits.

Is the LCS "Found" value greater  
than the Upper Control Limit  
reported on Form VII?

—    ☒    —

ACTION:

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YES    NO    N/A

If yes, flag (J) all the associated  
detects  $\geq$  MDL as estimated (J).

Is the LCS "Found" value lower  
than the Lower Control Limit  
reported on Form VII?

—    [☒]    —

ACTION:

If yes, flag detects as "J" and  
non-detects as "UJ".

A.1.21    ICP-AES/ICP-MS Serial Dilution - Form VIII

NOTE: Serial dilution analysis is required only  
when the initial concentration is equal to or  
greater than 50 x MDL.

A.1.21.1    Was a Serial Dilution analysis  
performed:

For each SDG?

[☒]    —    —

On one of the SDG samples?

[☒]    —    —

For each matrix type?

[☒]    —    —

For each concentration range  
(low or med.)?

[☒]    —    —

Was a Serial Dilution sample  
analyzed with the SDG samples?

[☒]    —    —

ACTION:

If no for any of the above, flag  
as estimated (J) detects  $\geq$  MDL of  
all the SDG samples for which the  
ICP Serial Dilution Analysis was  
not performed.

A.1.21.2    Was a Field Blank or PE sample used  
for the Serial Dilution Analysis?

—    [☒]    —

ACTION:

If yes, flag as estimated (J) detects  
 $\geq$  MDL of all the SDG samples

A.1.21.3    Circle on Form VIII the Percent Differences  
(%D) between sample results and its dilution  
results that are outside the control limits  $\pm 10\%$

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when initial concentrations  $\geq 50 \times$  MDLs.

YES    NO    N/A

Are results outside the control  
limits flagged with an "E" (Lab Qualifier)  
on Form VIII and all Form I's?

[ ]    —    /

ACTION:

If no, write in the Contract-Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.21.4    Are any %D values:

> 10%?

—    [ / ]    —

$\geq 100\%$ ?

—    [ / ]    —

ACTION:

If the Percent Difference (%D) is  
greater than 10%, flag (J) as estimated  
all associated samples whose raw data  $\geq$  MDL;  
if the %D is  $\geq 100\%$ , reject (R) and red-line  
all associated samples with raw data  $\geq$  MDL.

(NOTE: Replace "E" with "J" or "R" as appropriate.)

A.1.22    Total/Dissolved or Inorganic/Total Analytes

A.1.22.1    Were any analyses performed for  
dissolved as well as total analytes  
on the same sample(s)?

—    [ / ]    —

Were any analyses performed for  
inorganic as well as total analytes  
on the same sample(s)?

—    [ / ]    —

ACTION:

If yes, prepare a Form (Appendix A.5)  
to compare the differences between  
dissolved (or inorganic) and total  
analyte concentrations. Compute each  
difference on Appendix A.5 as a percent  
of the total analyte only when both of  
the following conditions are fulfilled:

- (1) The dissolved (or inorganic) concentration  
is greater than total concentration, and
- (2) greater than or equal to  $5 \times$  MDL.

A.1.22.2    Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 20%?

—    [ ]    /

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YES      NO      N/A

A.1.22.3      Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 50%?

—      [ ]      /

ACTION:

If the percent difference is greater  
than 20%, flag (J) both dissolved/inorganic  
and total concentrations as estimated. If  
the difference is more than 50%, reject (R)  
and red-line both the values.

A.1.23      Field Blank - Form I

NOTE: Designate "Field Blank" as such on Form I

A.1.23.1      Was a Field/Rinsate Blank collected  
and analyzed with the SDG samples?

[ ]      /      —

If yes, is any Field/Rinsate Blank  
absolute value of an analyte on Form I  
greater than its CRQL (or 2xMDL when MDL > CRQL)?

—      [ ]      /

If yes, circle the Field Blank value  
on Form I that is greater than the  
CRQL, (or 2 x MDL when MDL > CRQL).

Is any Field Blank value greater  
than CRQL also greater than the  
Preparation Blank value?

—      [ ]      /

If yes, is the Field Blank value  
(> CRQL and > the prep. blank value)  
already rejected due to other QC  
criteria?

[ ]      —      /

ACTION:

If the Field Blank value was not rejected,  
reject all associated sample data (except  
the Field Blank results) greater than the  
CRQL but less than the Field Blank value.  
Reject on Form I's the soil sample results  
whose raw values in ug/L in the instrument  
printout are greater than the CRQL but less  
than the Field Blank value in ug/L. Flag as  
"J" detects between the Field Blank value and  
10x Field Blank value. If the sample result  $\geq$  MDL  
but  $\leq$  CRQL, replace it with CRQL-U.

If the Field Blank value is less than the

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YES    NO    N/A

Prep. Blank value, do not qualify the sample results due to the Field Blank criteria.

NOTE:

1. Field Blank result previously rejected due to other criteria cannot be used to qualify field samples.
2. Do not use Rinsate Blank associated with soils to qualify water samples and vice versa.

A.1.24    Verification of Instrumental Parameters - Form IX, XA, XB, XI

A.1.24.1    Is verification report present for:

Method Detection Limits (Form IX-Annually)?	<input checked="" type="checkbox"/>	___	___
ICP-AES Interelement Correction Factors (Form XA & XB -Quarterly)?	<input checked="" type="checkbox"/>	___	___
ICP-AES & ICP-MS Linear Ranges (Form XI-Quarterly)?	<input checked="" type="checkbox"/>	___	___

ACTION:

If no, contact CLP PO/TOPO for submittal from the laboratory.

A.1.24.2    Method Detection Limits - Form IX

A.1.24.2.1 Are MDLs present on Form IX for:

All the analytes?	<input checked="" type="checkbox"/>	___	___
All the instruments used?	<input checked="" type="checkbox"/>	___	___
Digested and undigested samples and Calib.Blanks?	<input checked="" type="checkbox"/>	___	___
ICP-AES and ICP-MS when both instruments are used for the same analyte?	<input type="checkbox"/>	___	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, prepare Telephone Record Log and contact CLP PO/TOPO for submittal of the MDLs from the laboratory. Report to CLP PO and write in the Contract Problems/Non-Compliance Section of the Data Review Narrative if the MDL concentration is not less than ½ CRQL.

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A.1.24.2.2 Is MDL greater than the CRQL  
for any analyte?

<u>YES</u>	<u>NO</u>	<u>N/A</u>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If yes, is the analyte concentration  
on Form I greater than 5 x MDL for  
the sample analyzed on the instrument  
whose MDL exceeds CRQL?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, flag as estimated (J) all  
values less than five times MDL for  
the analyte whose MDL exceeds the CRQL.

A.1.24.3    Linear Ranges - Form XI

A.1.24.3.1 Was any sample result higher than  
the high linear range for ICP-AES  
or ICP-MS?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

Was any sample result higher than  
the highest calibration standard  
for mercury or cyanide?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

If yes for any of the above, was  
the sample diluted to obtain the  
result reported on Form I?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, flag (J) as estimated the  
affected detects ( $\geq$  MDL) reported  
on Form I.

A.1.25    ICP-MS Tune Analysis - Form XIV

A.1.25.1 Was the ICP-MS instrument  
tuned prior to calibration?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, reject (R) and red-line all  
sample data for which tuning was not  
performed.

A.1.25.2 Was the tuning solution analyzed  
or scanned at least five times  
consecutively?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Were all the required isotopes  
spanning the analytical range  
present in the tuning solution?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Was the mass resolution within

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YES NO N/A

0.1 amu for each isotope in the  
tuning solution?

[ ]

—

✓

Was %RSD less than 5% for each  
isotope of each analyte in the  
tuning solution?

[ ]

—

✓

ACTION:

If no for any of the above, qualify  
all results  $\geq$  MDL associated with that  
Tune as estimated "J", and all non-detects  
associated with that Tune as "UJ".

A.1.26 ICP-MS Internal Standards - Form XV

A.1.26.1 Were the Internal Standards added  
to all the samples and all QC  
samples and calibration standards  
(except the Tuning Solution)?

[ ]

—

✓

Were all the target analyte  
masses bracketed by the masses  
of the five internal standards?

[ ]

—

✓

ACTION:

If none of the Internal Standards was  
added to the samples, reject (R) and  
red-line all the associated sample data  
(detects & non-detects). If internal  
standards were used but did not cover all  
the analyte masses, reject (R) and red-line  
only the analyte results not bracketed by  
the internal standard masses.

A.1.26.2 Was the intensity of an Internal  
Standard in each sample within 60-125%  
of the intensity of the same Internal  
Standard in the calibration blank?

[ ]

—

✓

If no, was the original sample diluted  
two fold, Internal Standard added and the  
sample re-analyzed?

[ ]

—

✓

Was the %RI for the two fold diluted sample  
within the acceptance limits (60-125%)?

[ ]

—

✓

ACTION:

If no for any of the above, flag detects  
as "J" and non-detects "UJ" of all the  
analytes with atomic masses between the  
atomic mass of the internal standard lighter

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than the affected internal standard, and the  
atomic mass of the internal standard heavier  
than the affected internal standard.

A.1.27 Percent Solids of Sediments

A.1.27.1 Are percent solids in sediment(s):

< 50%?

\_\_\_\_\_ [ ] \_\_\_\_\_

ACTION:

If yes, qualify as estimated (J) all detects and  
non-detects of a sample that has percent solids  
less than 50% (i.e., moisture content greater than 50%).

NOTE:

Flag(J) only the sample results  
that were not previously flagged  
due to other QC criteria.

Inorganic Data Review Narrative

Case#	_____	Site:	_____	Matrix: Soil	_____
SDG#	_____	Lab:	_____	Water	_____
Sampling Team:	_____	Reviewer:	_____	Other	_____

A.2.1 Data Validation Flags:

The following flags may have been applied in red by the data validator and must  
be considered by the data user.

- J - This flag indicates the result qualified as estimated
- R and Red-Line - A red-line drawn through a sample result indicates unusable value.  
The red-lined data are known to contain significant errors based on  
documented information and must not be used by the data user.
- U - This data validation qualifier is applied to sample results  
≥ MDL when associated blank is contaminated
- Fully Usable Data - The results that do not carry "J" or "red-line" are fully  
usable.

A.2.2 Laboratory Qualifiers:

The CLP laboratory applies a contractual qualifier on all

**Site:** Glen Isle  
**Laboratory:** TestAmerica, Inc.  
**Report No.:** 480-74220-1  
**Reviewer:** Christina Rink/Laboratory Data Consultants for RXR Glen Isle Partners  
**Date:** February 10, 2015

**Samples Reviewed and Evaluation Summary**

FIELD ID	LAB ID	FRACTIONS VALIDATED
LT-G-022 (0-2)	480-74220-1	Arsenic and Lead
LT-GI-001 (4-6)	480-74220-2	Lead
LT-GI-001 (4-6)MS	480-74220-2MS	Lead
LT-GI-001 (4-6)MSD	480-74220-2MSD	Lead

**Associated QC Samples(s):**

Field/Trip Blanks: None Associated

Field Duplicate pair: None Associated

The above-listed soil samples were collected on January 14, 2015 and were analyzed for arsenic and lead by SW-846 methods 6010C. The data validation was performed in accordance with the USEPA Region 2 *Standard Operating Procedure for the Evaluation of Metals for the Contract Laboratory Program*, SOP HW-2, Revision 13 (September 2006) and the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*, EPA 540-R-10-011 (January 2010), modified as necessary to accommodate the non-CLP methodologies used.

The inorganic data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness
- Holding Times and Sample Preservation
- Instrument Calibration
- Contract Required Quantitation Limit (CRQL) Standard Recoveries
- Blank Analysis Results
- Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results
- Matrix Spike (MS) Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Certified Reference Material (CRM) Results
- Serial Dilution Results
- Moisture Content
- Detection Limits Results
- Sample Quantitation Results

#### **Overall Evaluation of Data and Potential Usability Issues**

All results are usable as reported or usable with minor qualification due to sample matrix quality control outliers.

The validation findings were based on the following information.

#### **Data Completeness**

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

#### **Holding Times and Sample Preservation**

All criteria were met.

#### **Instrument Calibration**

All criteria were met.

#### **CRQL Standard Recoveries**

All criteria were met.

#### **Blank Results**

No analytes were detected in the laboratory method and instrument blank samples.

No field blanks were identified in this SDG.

### **ICP ICS Results**

All analytes were within control limits in the ICSA and ICSAB analyses.

### **MS/MSD Results**

The laboratory performed MS and MSD analyses on sample LT-GI-001 (4-6) for lead. The following table lists the analytes which exhibited recoveries outside of the control limits of 75 - 125% in the MS/MSD and the resulting validation actions.

MS Sample	Analyte	MS %R	MSD %R	RPD (Limits)	QC Limits	Associated Samples	Validation Actions
LT-GI-001 (4-6)MS/MSD	Lead	-	-	109 ( $\leq 35$ )	-	LT-G-022 (0-2) LT-GI-001 (4-6)	J detects

Estimate (J) the detect lead results for the samples listed above due to high MS/MSD relative percent difference (RPD) results. The direction of the bias cannot be determined from this nonconformance. The results are usable for project objectives as estimated values which may have a minor effect on the data usability.

### **Laboratory Duplicate Results**

Laboratory duplicates were not associated with this sample set. Validation action was not required on this basis.

### **Field Duplicate Results**

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

### **CRM Results**

All criteria were met.

### **Serial Dilution Results**

A serial dilution analysis was performed on sample LT-GI-001 (4-6) for metals. Analytes that did not meet the criteria are summarized in the following table.

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Validation Actions
LT-GI-001 (4-6)	Lead	11 ( $\leq 10$ )	LT-G-022 (0-2) LT-GI-001 (4-6)	J detects

The detect results for lead were qualified as estimated (J) due to high percent difference in the serial dilution analysis. The direction of the bias cannot be determined from this nonconformance.

The results can be used for project objectives as estimated values which may have a minor impact on the data usability.

### **Moisture Content**

All criteria were met.

### **Detection Limits Results**

No results were reported below the reporting limit (RL).

No dilutions were required.

### **Sample Quantitation Results**

Calculations were spot-checked; no discrepancies were noted.

## DATA VALIDATION QUALIFIERS

- U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.
- J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified “J” data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The ‘J’ data may be biased high or low or the direction of the bias may be indeterminable.
- UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified “UJ” data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The ‘UJ’ data may be biased low.
- R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 3369304bSDG #: 480-74220-1Laboratory: Test America, Inc.**VALIDATION COMPLETENESS WORKSHEET**

Cat B

Date: 2/11/15Page: 1 of 1Reviewer: g2nd Reviewer: A**METHOD:** As & Pb (EPA SW 846 Method 6010C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	Instrument Calibration	A	
III.	ICP Interference Check Sample (ICS) Analysis	A	
IV.	Laboratory Blanks	A	
V.	Field Blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	
VII.	Duplicate sample analysis	N	
VIII.	ICP Serial Dilution	SW	
IX.	Laboratory control samples	A	CRM
X.	Field Duplicates	N	
XI.	Sample Result Verification	A	all 7 RL, all @ IX
XII.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	LT-G-022 (0-2)	480-74220-1	Soil	01/14/15
2	LT-GI-001 (4-6)	480-74220-2	Soil	01/14/15
3	LT-GI-001 (4-6)MS	480-74220-2MS	Soil	01/14/15
4	LT-GI-001 (4-6)MSD	480-74220-2MSD	Soil	01/14/15
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Notes:



LDC #:

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates

Page:      of     

Reviewer: a

2nd Reviewer:                     

**METHOD:** Trace metals (EPA SW 846 Method 6010B/6020A/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y ~~(N)~~ N/A

Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water samples and  $\leq 35\%$  for soil samples?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments:

Pb74x



LDC #: 3693045

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: OR  
2nd Reviewer: ←

**METHOD:** Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV (09:30)	ICP (Initial calibration)	Pb	0.36788	0.375	98	98	Y
	ICP/MS (Initial calibration)						
	CVAA (Initial calibration)						
CCV (09:30)	ICP (Continuing calibration)	As	0.47418	0.5	95	95	Y
	ICP/MS (Continuing calibration)						
	CVAA (Continuing calibration)						

Comments:

LDC #: ~~33575419~~ 33573046VALIDATION FINDINGS WORKSHEET  
Level IV Recalculation WorksheetPage: 1 of 1  
Reviewer: 9  
2nd Reviewer: ←

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)  
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units) mg/L	True / D / SDR (units) mg/L	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
ICSA B (09:44)	ICP interference check	As	0.10667	0.1	107	107	Y
CRM	Laboratory control sample	As	114.1	150	76.0	76.0	Y
3	Matrix spike	Pb	(SSR-SR) -156.6	41.7	NA (74%)	-377	Y
3/4	Duplicate	Pb	181.4	628.9	109	109	Y
2	ICP serial dilution	Pb	311.33	380.48	11	58% 11	Y

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



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YES      NO      N/A

A.1.1 Contract Compliance Screening Report

Present?

☐      ☐      ☒

ACTION:      If no, contact RSCC/PO.

A.1.2 Record of Communication (from RSCC)

Present?

☐      ☐      ☒

ACTION:      If no, request from the RSCC.

A.1.3 Sampling Trip Report

Present and complete?

☐      ☐      ☒

ACTION:      If no, contact RSCC/PO.

A.1.4 Chain of Custody/Sample Traffic Report

Present?

☒      ☐      ☐

Legible?

☒      ☐      ☐

Signature of sample custodian  
present?

☒      ☐      ☐

ACTION: If no, contact RSCC/WAM/PO.

A.1.5 Cover Page

Present?

☒      ☐      ☐

Is the Cover Page properly filled in  
and the verbatim signed by the lab  
manager or the manager's designee?

☒      ☐      ☐

Do the sample identification numbers  
on the Cover Page agree with sample  
Identification numbers on:

(a) Traffic Report Sheet?

☐      ☐      ☒

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(b) Form I's?

<u>YES</u>	<u>NO</u>	<u>N/A</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is the number of samples on the Cover  
Page the same as the number of  
samples on the Traffic Report sheet  
and the Regional Record of Communication  
(ROC) for the data Case?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

**ACTION:**

If no for any of the above, prepare  
Telephone Record Log and contact RSCC/PO  
for re-submittal of the corrected Cover Page  
from the laboratory.

**A.1.6 SDG Narrative, DC-1 & DC-2 Form**

Is the SDG Narrative present?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Is Sample Log-In Sheet(Form DC-1)  
present and complete?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

Is Complete SDG Inventory Sheet(Form DC-2)  
present and complete?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

**ACTION:**

If no, write in the Contract-Problems/  
Non-Compliance Section of the Data Review  
Narrative.

**A.1.7 Form I to XV**

A.1.7.1    Are all the Form I through Form XV  
labeled with:

Laboratory Name?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

Laboratory Code?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------

RAS/Non-RAS Case No.?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

SDG No.?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------	--------------------------

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YES      NO      N/A

Contract No.?

☐      ☐      ☒

**ACTION:**

If no for any of the above, note under Contract Problem/Non-Compliance Section of the "Data Review Narrative" and contact PO for corrected Form(s) from the laboratory.

A.1.7.2

After comparing values on Forms I-IX against the raw data, do any computation/transcription errors exceed 10% of the reported values on the Forms for:

(a) all analytes analyzed by ICP-AES?

☐      ☒      ☐

(b) all analytes analyzed by ICP-MS?

☐      ☐      ☒

(c) Mercury?

☐      ☐      ☒

(d) Cyanide?

☐      ☐      ☒

**ACTION:**

If yes, prepare Telephone Record Log and contact CLP PO/TOPO for the corrected data from the laboratory.

**A.1.8 Raw Data**

Data shall not be validated without the hard/electronic copies of the associated raw data for samples and QC samples.

**A.1.8.1      Digestion/Distillation Log**

Digestion Log for ICP-AES  
(Form XII) present?

☒      ☐      ☐

Digestion Log for ICP-MS  
(Form XII) present?

☐      ☐      ☒

Digestion Log for mercury  
(Form XII) present?

☐      ☐      ☒

Distillation Log for cyanide  
(Form XII) present?

☐      ☐      ☒

Are pH values for metals and

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YES    NO    N/A

cyanide reported for each  
aqueous sample?

☐    ☐    ☒

Are percent solids calculations  
present for soils/sediments?

☒    ☐    ☐

Are preparation dates present on the  
sample preparation logs/bench sheets?

☒    ☐    ☐

NOTE:

Digestion/Distillation log must include weights, volumes,  
and dilutions used to obtain the reported results.

A.1.8.2    Is the analytical instrument  
real-time    printouts present for:

ICP-AES?

☒    ☐    ☐

ICP-MS?

☐    ☐    ☒

Mercury?

☐    ☐    ☒

Cyanide?

☐    ☐    ☒

Are all laboratory bench sheets  
and instrument raw data printouts  
necessary to support all sample  
analyses and QC operations:

Legible?

☒    ☐    ☐

Properly labeled?

☒    ☐    ☐

Are all field samples, QC samples  
and field QC samples present on:

Digestion/Distillation log?

☒    ☐    ☐

Instrument Printouts?

☒    ☐    ☐

ACTION:

If no for any of the above questions in  
Section A.1.8.1 and Section A.1.8.2, write  
Telephone Record Log and contact TOPO/PO  
for re-submittal from the laboratory.

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YES    NO    N/A

**A.1.9 Technical Holding Times:** (Aqueous and soil samples)

(Examine sample Traffic Reports and digestion/distillation logs to determine the holding time from the sample collection date to the sample preparation date.)

A.1.9.1    Cyanide distillation(14 days)exceeded?    ☐ ☒

Mercury analysis(28 days) exceeded?    ☐ ☒

Other Metals analysis(180 days)exceeded?    ☐ ☒

**ACTION:**

If yes, reject (R) and red-line non-detects and flag as estimated (J)results  $\geq$  MDL even if sample(s) was preserved properly.

**NOTE:**

In addition to qualifying the data, a list of all samples and analytes which exceeded the holding times must be prepared. Report for each sample the number of days that were exceeded. (Subtract the sample collection date from the sample preparation date). Attach this list to the data review narrative.

A.1.9.2    Is pH of aqueous samples for:

Metals Analysis     $\leq 2$ ?    ☐ ☒

Cyanide Analysis     $\geq 12$ ?    ☐ ☒

**ACTION:**

If no for any of the above, flag non-detects as "R" and detects as "J".

A.1.9.3    Is the cooler temperature  $\leq 10$  C°?    ☒ ☐

**ACTION:**

If cooler temperature is  $>10^{\circ}\text{C}$  , flag non-detects as "UJ" and detects as "J".

**A.1.10 Final Data Correctness - Form I**

A.1.10.1    Are Form I's for all samples

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YES    NO    N/A

present and complete?

☒    ☐    ☐

**ACTION:**

If no, prepare Telephone Record  
Log and contact CLP PO/TOPO for  
submittal from the laboratory.

- A.1.10.2    Verify there are no calculation and transcription errors in the results reported on Form I's. Circle on each Form I all results that are incorrect.

Is the calculation error less than 10% of the correct result? ☒    ☐    ☐

Are results on Form I's reported in correct units (ug/L for aqueous and MG/KG for soils)? ☒    ☐    ☐

Are results on Form I'S reported by    correct significant figures? ☒    ☐    ☐

Are soil sample results on Form I's corrected for percent solids?

☒    ☐    ☐

Are all "less than MDL" values reported by the CRQLs and coded with "U"?

☒    ☐    ☐

Are values less than the CRQLs but greater than or equal to the MDLs flagged with "J"?

☒    ☐    ☐

Are appropriate contractual quality control and Method qualifiers used?

☒    ☐    ☐

**ACTION:**

If no for any of the above questions, prepare Telephone Record Log, and contact CLP PO/TOPO for corrected data.

- A.1.10.3    Do EPA sample identification numbers and the corresponding laboratory sample identification numbers match on the Cover Page, Form I's and in the raw data?

☒    ☐    ☐

Was a brief physical description

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of the samples before and after  
digestion given on the Form I's?

YES    NO    N/A

[ ]    ☒    [ ]

Was any sample result outside the  
mercury/cyanide calibration range  
or the ICP-AES/ICP-MS linear range  
diluted and noted on the Form I?

[ ]    ☒    [ ]

**ACTION:**

If no for any of the above, note under  
the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative.

**A.1.11 Initial Calibration**

A.1.11.1    Is a record of at least 2 point  
(A blank and a standard) calibration  
present for ICP-AES analysis?

☒    [ ]    [ ]

Is a record of at least 2 point  
(a blank and a standard) calibration  
present for ICP-MS analysis?

[ ]    [ ]    ☒

Is a record of at least 5 point calibration  
(a blank & 4 standards) present for Hg analysis?

[ ]    [ ]    ☒

Is a record of at least 4 point calibration  
(a blank & 4 standards) present for cyanide?

[ ]    [ ]    ☒

**ACTION:**

If incomplete or no initial calibration  
was performed, reject (R) and red-line  
the associated data (detects & non-detects).

Is one initial calibration standard  
at the CRQL level for cyanide and  
mercury?

[ ]    [ ]    ☒

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.11.2    Is the curve correlation  
coefficient  $\geq 0.995$  for:

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	YES	NO	N/A
Mercury Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cyanide Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICP-AES (more than 2 point Calib.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP-MS (more than 2 point calib.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no, qualify the associated sample results  $\geq$  MDL as estimated "J" and non-detects as "UJ".

NOTE:

The correlation coefficient shall be calculated by the data validator using standard concentrations and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.12 Initial and Continuing Calibration Verification- Form IIA

A.1.12.1	Present and complete for every metal and cyanide?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Present and complete for ICP-AES and ICP-MS when both these methods were used for the same analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, prepare a Telephone Record Log and contact PO/TOPO for re-submittal from the laboratory.

A.1.12.2	Was a Continuing Calibration Verification performed every 10 samples or every 2 hours whichever is more frequent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
----------	---	-------------------------------------	--------------------------	--------------------------

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

A.1.12.3	Was an ICV or a mid-range standard distilled and analyzed with each batch of cyanide samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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YES      NO      N/A

ACTION:

If no for any of the above, write  
in the Contract-Problem/Non-Compliance  
Section of the Data Review Narrative and  
qualify results  $\geq$  MDL as estimated (J).

- A.1.12.2      Circle on each Form IIA all percent recoveries  
that are outside the contract windows.

Are ICV/CCVs within control limits for:

Metals - 90-110%R?

[ ☒ ]      ☐      ☐

Hg - 80-120%R?

[ ☐ ]      ☐      ☒

Cyanide - 85-115%R?

[ ☐ ]      ☐      ☒

ACTION:

If no, qualify all samples between a previous technically acceptable CCV  
standard and a subsequent technically acceptable CCV standard as  
follows as follows:

Qualify as estimated (J) all detects and non-detects,  
if the ICV/CCV %R is between 75-89%(65-79% for Hg; 70-84% for CN).  
Qualify only positive results( $\geq$  MDL) as "J" if the ICV/CCV %R is  
between 111-125%(121-135% for Hg; 116-130% for CN). Reject (R) and  
red-line only  
detects if the recovery is greater than 125% (135% for Hg; 130% for  
CN). Reject (R) and red-line all associated results (hits and non-  
detects) if the recovery is less than 75%(65% for Hg; 70% for CN).

NOTE:

For ICV that does not fall within the acceptance limits,  
qualify all samples reported from the analytical run.

- A.1.12.3      Was the distilled ICV or mid-range  
standard for cyanide within acceptance  
limits (85-115%)?

[ ☐ ]      ☐      ☒

ACTION:

If no, Qualify all cyanide results  $\geq$  MDL as "J".

A.1.13 CRQL Standard Analysis - Form IIB

- A.1.13.1      For each ICP-AES run, was a CRI

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(CRQL or MDL when MDL > CRQL)  
standard analyzed?

(Note: CRI is not required for Al, Ba,  
Ca, Fe, Mg, Na and K.)

YES      NO      N/A

☒

☐

☐

For each ICP-MS run, was a CRI  
(CRQL or MDL when MDL > CRQL) standard  
analyzed for each mass/isotope used  
for the analysis?

☐

☐

☒

For each mercury run, was a CRQL  
standard analyzed?

☐

☐

☒

For each cyanide run, was a CRQL  
standard analyzed?

☐

☐

☒

**ACTION:**

If no for any of the above, write  
this deficiency in the Contract Problems/  
Non-Compliance Section of the Data Review  
Narrative, inform CLP PO and flag results  
in the affected ranges (detects <2xCRQL) as J  
and non-detects UJ.

The affected ranges are:

ICP-AES Analysis - \*True Value  $\pm$  CRQL

ICP-MS Analysis - \*True Value  $\pm$  CRQL

Mercury Analysis - \*True Value  $\pm$  CRQL

Cyanide Analysis - \*True Value  $\pm$  CRQL

\* True value of the CRQL Standard

A.1.13.2 Was a CRQL standard analyzed after the  
ICV/ICB, before the final CCV/CCB and  
once every 20 analytical samples in  
the analytical run for each analysis?

☐

☒

☐

**ACTION:**

If no, write in the Contract Problem/  
Non-Compliance Section of the  
"Data Review Narrative".

A.1.13.3 Circle on each Form IIB all percent  
recoveries that are outside the  
acceptance windows.

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Is the CRQL standard within control limits for:

Metals(ICP-AES/ICP-MS)- 70 - 130%?

YES NO N/A

☒ ☐ ☐

Mercury- 70 - 130%?

☐ ☐ ☒

Cyanide - 70 - 130%?

☐ ☐ ☒

**ACTION:**

If no, flag detects <2xCRQL as "J" and non-detects as "UJ" if the CRQL standard recovery is between 50-69%. Flag(J) only detects <2xCRQL if the recovery is between 131% and  $\leq 180\%$ . If the recovery is less than 150%, reject(R) and red-line non-detects and detects < 2xCRQL, and flag (J) detects between 2xCRQL and ICV/CCV. Reject and red-line only detects <2xCRQL and flag (J) detects  $\geq 2xCRQL$  but < ICV/CCV if the recovery is > 180%.

**NOTE:**

1. Qualify all field samples analyzed between a previous technically acceptable analysis of the CRQL standard and a subsequent acceptable analysis of the CRQL standard
2. Flag (J) or reject (R) only the final sample results on Form I's when Sample raw data are within the affected ranges and the CRQL standard is outside the acceptance windows.
3. The samples and the CRQL standard must be analyzed in the same analytical run.

**A.1.14 Initial and Continuing Calibration Blanks - Form III**

A.1.14.1 Present and complete for all the instruments used for the metals and cyanide analyses?

☒ ☐ ☐

Was an initial Calibration Blank analyzed after ICV?

☒ ☐ ☐

Was a continuing Calibration Blank analyzed after every CCV and every 10 samples or every 2 hours, whichever is more frequent?

☒ ☐ ☐

Were the ICB & CCB values  $\geq$  MDL but < CRQL reported on Form III and flagged "J" by

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YES      NO      N/A

using MDLs from direct analysis(Preparation  
Method "NP1")?

[ ☒ ]

(Check Form III against the raw data)

ACTION:

If no, inform CLP PO/TOPO and make a note  
in the Contract-Problems/Non-Compliance  
Section of the "Data Review Narrative".

A.1.14.2      Circle with red pencil on each Form III  
all Calib. Blank values that are:

$\geq$  MDL but  $\leq$  CRQL

$>$  CRQL

A.1.14.2.1    When MDL < CRQL, is any Calib. Blank  
value  $\geq$  MDL but  $\leq$  CRQL?

                 [ ☒ ]

ACTION:

If yes, change sample results  $\geq$  MDL  
but  $\leq$  CRQL to the CRQL with a "U".  
Do not qualify non-detects.

A.1.14.2.2 When MDL < CRQL, is any Calib. Blank  
value  $>$  CRQL?

                 [ ☒ ]

ACTION:

If yes, reject (R) and red line the  
associated sample results  $>$  CRQL  
but  $<$  ICB/CCB Blank Result. Flag as "J"  
detects  $>$  ICB/CCB blank value but  
 $<$  10xICB/CCB value. Change the sample  
results  $\geq$  MDL but  $\leq$  the CRQL to CRQL  
with a "U".

A.1.14.2.3 Is any Calibration Blank value  
below the negative CRQL?

                 [ ☒ ]

ACTION:

If yes, flag (J) as estimated all  
associated sample results  $\geq$  CRQL but  
 $<$  10xCRQL.

NOTE:

1. For ICB that does not meet the technical  
QC Criteria, apply the action to all samples

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YES    NO    N/A

- reported from the analytical run.
2. For CCBs that do not meet the technical QC criteria, apply the action to all samples analyzed between a previous technically acceptable analysis of CCB and a subsequent technically acceptable analysis of the CCB in the analytical run.,

A.1.15    Preparation Blank - FORM III  
NOTE: The Preparation Blank for mercury is the same as the calibration blank.

A.1.15.1    Was one Preparation Blank prepared with and analyzed for:

Each Sample Delivery Group (SDG)?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

Each batch of the SDG samples digested/distilled?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

Each matrix type?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

All instruments used for metals and cyanide analyses?

[ ☒ ]    \_\_\_\_\_    \_\_\_\_\_

ACTION:

If no for any of the above, flag as estimated (J) all the associated positive data <10xMDL for which the Preparation Blank was not analyzed.

NOTE:

If only one blank was analyzed for more than 20 samples, then the first 20 samples analyzed are not estimated (J), but all additional samples must be qualified (J).

A.1.15.2    Circle with red pencil on each Form III all Prep. Blank values that are:

≥ MDL but ≤ CRQL, and

> CRQL

A.1.15.2.1    When MDL < CRQL, is any preparation blank value ≥ MDL but ≤ CRQL?

\_\_\_\_\_ [ ☒ ] \_\_\_\_\_

ACTION:

If yes, change sample result ≥ MDL

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but  $\leq$  CRQL to CRQL with a "U".

A.1.15.2.2 When the MDL  $\leq$  CRQL, is any Preparation Blank value greater than its CRQL?

\_\_\_ [☒] \_\_\_

If yes, is the Prep. Blank value greater than the value of the associated Field Blank collected and analyzed with the SDG samples?

\_\_\_ [☐] ☒

If yes, is the lowest concentration of that analyte in the associated samples less than 10 times the Preparation Blank value?

\_\_\_ [☐] ☒

ACTION:

If yes, reject (R) and red-line all associated sample results greater than the CRQL but less than the Prep.Blank value. Flag as "J" detects > Prep. Blank value but <10xPrep.Blank. If the sample result  $\geq$  MDL but  $\leq$  CRQL, replace it with CRQL-U.

If the Prep. Blank value is less than the same analyte value in the Field Blank, do not qualify the sample results due to the Prep. Blank criteria.

NOTE:

Convert soil sample result to mg/Kg on wet weight basis to compare with the soil Prep. Blank result on Form III.

A.1.15.2.3 Is the Prep. Blank concentration below the negative CRQL?

\_\_\_ [☒] \_\_\_

ACTION:

If yes, flag (J) all associated sample results less than 10xCRQL. Qualify non-detects as estimated (UJ).

A.1.15.2.4 When the MDL is greater than the CRQL, is the preparation blank concentration on Form III greater than two times the MDL?

\_\_\_ [☒] \_\_\_

ACTION:

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YES    NO    N/A

If yes, reject (R) and red-line all positive sample results with sample raw data less than 10 times the Preparation Blank value.

A.1.16    ICP-AES/ICP-MS Interference Check Sample (ICS) - Form IV

NOTE: Not required for CN, Hg, Al, Ca, Fe and Mg.

A.1.16.1    Present and complete?

[ ☒ ]    ☐    ☐

Was ICS analyzed at the beginning and end of each analytical run, and once for every 20 analytical samples?

[ ☒ ]    ☒    ☐

Was ICS analyzed at the beginning of the ICP-MS analytical run?

[ ☒ ]    ☐    ☐

ACTION:

If no, flag as estimated (J) all sample results.

A.1.16.2    ICP-AES Method

A.1.16.2.1    ICSA Solution:

For ICP-AES, are the ICSA "Found" analyte values within the control limits  $\pm$  of CRQL of the true/established mean value?

[ ☒ ]    ☐    ☐

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSA Solution on Form IV?

[ ☐ ]    ☐    ☒

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated only sample results  $\geq$ MDL

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YES    NO    N/A

for which the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag non-detects as "UJ" and detects as "J".

A.1.16.2.3 ICSAB Solution

For ICP-AES, are all analyte results in ICSAB within the control limits of 80-120 of the true/established mean value?

[ ☒ ]    ☐    ☐

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSAB Solution on Form IV?

[ ☐ ]    ☐    [ ☒ ]

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79%, qualify sample results  $\geq$  MDL as "J" and non-detects as "UJ". Reject (R) and red-line all sample results (detects & non-detects) for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only positive results.

A.1.16.3 ICP-MS Method

A.1.16.3.1 ICSA Solution:

For ICP-MS, are the ICSA "Found" analyte values within the control limits of  $\pm$ CRQL of the true/established mean value?

[ ☐ ]    ☐    [ ☒ ]

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated only sample results  $\geq$  MDL if the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag the associated sample detects as "J" and non-detects as "UJ".

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YES    NO    N/A

A.1.16.3.3 ICSAB Solution

For ICP-MS, are all analyte results in ICSAB within the control limits of 80-120% of the true/established mean value, whichever is greater?

[ ]

—

—

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated those associated sample results  $\geq$  MDL for which the ICSAB analyte recovery is greater than 120% but  $\leq$  150%. If the ICSAB recovery falls within 50-79% flag (J) as estimated the associated sample results  $\geq$  MDL. Reject (R) and red-line those all sample detects and non-detects for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only detects ( $\geq$  MDL).

A.1.17    Spiked Sample Recovery: Pre-Digestion/Pre-Distillation)-Form V A  
Note: Not required for Ca, Mg, K, and Na (both matrices); Al and Fe (soil only)

A.1.17.1    Was Matrix Spike analysis performed:

For each matrix type?

[✓]

—

—

For each SDG?

[✓]

—

—

On one of the SDG samples?

[✓]

—

—

For each concentration range  
(i.e., low, med., high)?

[✓]

—

—

For each analytical Method  
(ICP-AES, ICP-MS, Hg, CN) used?

[✓]

—

—

Was a spiked sample prepared and analyzed with the SDG samples?

[✓]

—

—

ACTION:

If no for any of the above, flag as estimated (J) all the positive data for which a spiked sample was not analyzed.

NOTE:

If more than one spiked sample were analyzed for one SDG, then qualify the associated data based on the worst spiked sample analysis.

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YES      NO      N/A

- A.1.17.2 Was a field blank or PE sample used for the spiked sample analysis?

\_\_\_\_ [☒] \_\_\_\_

ACTION:

If yes, flag (J) as estimated positive data of the associated SDG samples for which field blank or PE sample was used for the spiked sample analysis.

- A.1.17.3 Circle on each Form VA all spike recoveries that are outside the control limits (75-125%) that have sample concentrations less than four times the added spike concentrations.

Are all recoveries within the control limits when sample concentrations are less than or equal to four times the spike concentrations?

[☒] \_\_\_\_ \_\_\_\_

NOTE:

Disregard the out of control spike recoveries for analytes whose concentrations are greater than or equal to four times the spike added.

Are results outside the control limits (75-125%) flagged with Lab Qualifier "N" on Form I's and Form VA?

[ ] \_\_\_\_ [☒]

ACTION:

If no for any of the above, write in the Contract - Problems/Non-Compliance Section of the Data Review Narrative.

- A.1.17.4 Aqueous

Are any spike recoveries:

(a) less than 30%?

\_\_\_\_ [☐] [☒]

(b) between 30-74%?

\_\_\_\_ [☐] [☒]

(c) between 126-150%?

\_\_\_\_ [☐] [☒]

(d) greater than 150%?

\_\_\_\_ [☐] [☒]

ACTION:

If the matrix spike recovery is less than 30%, reject (R) and red-line all associated aqueous data (detects & non-detects). If between 30-74%, qualify all associated aqueous data  $\geq$  MDL as "J" and non-detects

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YES    NO    N/A

as "UJ". If between 126-150%, flag (J)  
all data  $\geq$  MDL as "J". If greater than 150%,  
reject (R) and red-line all associated data  $\geq$  MDL.

(NOTE: Replace "N" with "J", "R" as appropriate.)

A.1.17.5 Soil/Sediment

Are any spike recoveries:

7/4/11

(a) less than 10%?

—    [ ]    ☒

(b) between 10-74%?

—    [ ]    ☒

(c) between 126-200%?

—    [ ]    ☒

(d) greater than 200%?

—    [ ]    ☒

ACTION:

If yes for any of the above, proceed  
as follows:

If the matrix spike recovery is less  
than 10%, reject (R) and red-line all  
associated data (detects & non-detects);  
if between 10-74%, qualify all associated  
data  $\geq$  MDL as "J" and non-detects as "UJ";  
if between 126-200%, flag (J) all associated  
data  $\geq$  MDL as "J" If greater than 200%, reject  
(R) and red-line all associated data  $\geq$  MDL.  
(NOTE: Replace "N" with "J" or "R" as appropriate.)

A.1.18 Lab Duplicates) - Form VI

A.1.18.1 Was the lab duplicate analysis performed:

For each SDG?

☒    —    —

On one of the SDG samples?

☒    —    —

For each matrix type?

☒    —    —

For each concentration range  
(low or med.)?

☒    —    —

For each analytical Method  
(ICP-AES/ICP-MS, Hg, CN) Used?

☒    —    —

Was a lab duplicate prepared and  
analyzed with the SDG samples?

☒    —    —

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YES      NO      N/A

ACTION:

If no for any of the above, flag (J) as estimated all the SDG sample results (detects & non-detects) for which the lab duplicate analysis was not performed.

NOTE:

If more than one lab duplicate sample were analyzed for an SDG, then qualify the associated samples based on the worst lab duplicate analysis.

- A.1.18.2 Was a Field Blank or PE sample used for the Lab Duplicate analysis?

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If yes, flag as estimated (J) all SDG sample results (hits & non-detects) for which Field Blank or PE sample was used for duplicate analysis.

- A.1.18.3 Circle on each Form VI all values that are:

RPD > 20%, or

Absolute Difference > CRQL

Are all values within control limits (RPD  $\leq$  20% or absolute difference  $\leq$   $\pm$ CRQL)?

[ ] ☒ \_\_\_\_\_

If no, are all results outside the control limits flagged with an "\*" (Lab Qualifier) on Form VI and on all Form I's?

[ ] ☒ \_\_\_\_\_

ACTION:

If no, write in the Contract-Problems/ Non-Compliance Section of the Data Review Narrative.

NOTE:

The laboratory is not required to report on Form VI the RPD when both values are non-detects.

- A.1.18.4 Aqueous

- A.1.18.4.1 When sample and duplicate values are both  $\geq$  5xCRQL (substitute MDL for CRQL when MDL > CRQL),

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
is any RPD > 20% but < 100%?	___	[___]	/
is any RPD ≥ 100%?	___	[___]	/

ACTION:

If the RPD is > 20% but < 100%, flag (J) as estimated the associated sample data ≥ CRQL. If the RPD is ≥ 100%, reject (R) and red-line the associated sample data ≥ CRQL.

(NOTE: Replace "\*" with "J" or "R" as appropriate.)

A.1.18.4.2 When the sample and/or duplicate value < 5xCRQL (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate values:

> ± CRQL?	___	[___]	/
> ± 2xCRQL?	___	[___]	/

ACTION:

If the absolute difference is > CRQL, flag as estimated all the associated sample results ≥ MDL but < 5xCRQL as "J" and non-detects as "UJ". If the absolute difference is > 2xCRQL, reject (R) and red-line all the associated non-detects and detects ≥ MDL but < 5xCRQL.

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is > CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this difference to qualify sample results.

A.1.18.5 Soil/Sediment

A.1.18.5.1 When sample and duplicate values are both ≥ 5xCRQL (substitute MDL for CRQL when MDL > CRQL),

is any RPD ≥ 35% but < 120%?	✓	[___]	___
is any RPD ≥ 120%?	___	[✓]	___

ACTION:

If the RPD is ≥ 35% and < 120%, flag (J) as estimated the associated sample

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data  $\geq$  CRQL. If the RPD is  $\geq$  120%, reject  
(R) and red-line the associated sample  
data  $\geq$  CRQL.

A.1.18.5.2 When the sample and/or duplicate value  
< 5xCRQL (substitute MDL for CRQL when MDL > CRQL),  
is the absolute difference between sample  
and duplicate:

>  $\pm$  2 x CRQL?

\_\_\_\_\_ ☒ \_\_\_\_\_

>  $\pm$  4 x CRQL

\_\_\_\_\_ ☒ \_\_\_\_\_

ACTION:

If the absolute difference is > 2 x CRQL,  
flag all the associated sample results  $\geq$  MDL  
but < 5xCRQL as "J" and non-detects as "UJ".  
If the absolute difference is > 4xCRQL, reject  
(R) and red-line all the associated non-detects  
and detects  $\geq$  MDL but < 5xCRQL.

NOTE:

1. Replace "\*" with "J", "UJ" or "R" as appropriate.)
2. If one value is > CRQL and the other value is non-detect,  
calculate the absolute difference between the value > CRQL  
and the MDL, and use this difference to qualify sample results.

A.1.19      Field Duplicates

Aqueous Field Duplicates

A.1.19.1 Was an aqueous Field Duplicate pair  
collected and analyzed?  
(Check Sampling Trip Report)

[ ] \_\_\_\_\_ ☒

ACTION:

If yes, prepare a Form (Appendix A.4) for each  
aqueous Field Duplicate pair. Report the sample  
and Field Duplicate results on Appendix A.4 from  
their respective Form I's. Calculate and report RPD  
on Appendix A.4 when sample and its Field Duplicate  
values are both > 5xCRQL. Calculate and report the  
absolute difference on Appendix A.4 when at least one  
value (sample or duplicate) is < 5xCRQL. Evaluate the  
aqueous Field Duplicate analysis in accordance with the

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QC criteria stated in Sections A.1.19.2 and A.1.19.3.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other value is non-detect, calculate the absolute difference between the value > CRQL and the MDL, and use this the criteria to qualify the results.

A.1.19.2    Circle all values on the Form (Appendix A.4) for Field Duplicates that have:

RPD  $\geq$  20%    or

Difference  $> \pm$  CRQL

When sample and duplicate values are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL),

is any RPD  $\geq$  20%?

\_\_\_    [ ]    ☒

is any RPD  $\geq$  100%?

\_\_\_    [ ]    ☒

ACTION:

If the RPD is >20% but < 100%, flag (J) only the associated sample and its Field Duplicate results  $\geq$  CRQL. If the RPD is  $\geq$  100%, reject (R) and red-line only the associated sample and its Field Duplicate result  $\geq$  CRQL.

A.1.19.3    When the sample and/or duplicate value(s)  $< 5 \times \text{CRQL}$  (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate:

$> \pm$  CRQL?

\_\_\_    [ ]    ☒

$> \pm 2 \times \text{CRQL}$ ?

\_\_\_    [ ]    ☒

ACTION:

If the absolute difference is  $> \text{CRQL}$ , flag detects  $\geq$  MDL but  $< 5 \times \text{CRQL}$  as "J" and non-detects as "UJ". If the difference is  $> 2 \times \text{CRQL}$ , reject (R) and red-line non-detects

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YES    NO    N/A

and results  $\geq$  MDL but  $< 5 \times \text{CRQL}$  of the sample  
and its Field Duplicate.

Soil/Sediment Field Duplicates

- A.1.19.4    Was a soil field duplicate pair  
collected and analyzed?  
(Check Sampling Trip Report)

[ ]      /        

ACTION:

If yes, for each soil Field Duplicate  
pair proceed as follows:

Prepare Appendix A.4 for each Field Duplicate  
pair. Report on Appendix A.4 all sample and its  
Field Duplicate results in MG/KG from their  
respective Form I's. Calculate and report RPD when  
sample and its duplicate values are both greater  
than  $5 \times \text{CRQL}$ . Calculate and report the  
absolute difference when at least one value  
(sample or duplicate) is  $< 5 \times \text{CRQL}$ . Evaluate the  
Field Duplicate analysis in accordance with the  
QC Criteria stated in Sections A.1.19.5 and A.1.19.6.

NOTE:

1. Do not transfer "\*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when  $\text{MDL} > \text{CRQL}$ .
4. If one value is  $> \text{CRQL}$  and the other  
value is non-detect, calculate the  
absolute difference between the  
value  $> \text{CRQL}$  and the MDL, and apply  
the criteria to qualify the results.

- A.1.19.5    Circle on each Appendix A.4 all  
values that have:

$\text{RPD} \geq 35\%$ , or Difference  $> \pm 2 \times \text{CRQL}$   
When sample and duplicate values  
are both  $\geq 5 \times \text{CRQL}$  (substitute MDL for  
CRQL when  $\text{MDL} > \text{CRQL}$ ),

is any  $\text{RPD} \geq 35\%$  but  $< 120\%$ ?

      [ ]      /  

is any  $\text{RPD} \geq 120\%$ ?

      [ ]      /  

ACTION:

If the RPD is  $\geq 35\%$  but  $< 120\%$ ,

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YES    NO    N/A

flag only the associated sample  
and its Field Duplicate results  
≥ CRQL as "J". If the RPD is ≥ 120%,  
reject (R) and red-line only the sample  
and its Field Duplicate results ≥ CRQL.

A.1.19.6    When the sample and/or duplicate value(s)  
                 <5xCRQL (substitute MDL for CRQL when MDL > CRQL),  
                 is the absolute difference between sample  
                 and Field Duplicate:

> ± 2 x CRQL?

—    [ ]    ☒

> ± 4 x CRQL?

—    [ ]    ☒

ACTION:

If the absolute difference is > 2xCRQL, flag  
Sample and its Field Duplicate results ≥ MDL  
but <5xCRQL as "J" and non-detects as "UJ".  
If the difference is >4xCRQL, reject (R) and  
red-line non-detects and detects ≥ MDL but  
<5xCRQL of the sample and its Field Duplicate.

A.1.20    Laboratory Control Sample (LCS) - Form VII

A.1.20.1    Was one LCS prepared and analyzed for:

Each SDG?

☒    —    —

Each matrix type?

☒    —    —

Each batch samples digested/distilled?  
For each Method (ICP-AES, ICP-MS, Hg, CN)  
used?

☒    —    —  
☒    —    —

Was an LCS prepared and analyzed with  
the samples?

☒    —    —

ACTION:

If no for any of the above, prepare  
Telephone Record Log and contact  
CLP PO or TOPO for submittal of the  
LCS results. Flag (J) as estimated all  
the data for which an LCS was not  
analyzed.

NOTE:

If only one LCS was analyzed for

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YES    NO    N/A

more than 20 samples, then the first  
20 samples analyzed are not flagged(J),  
but all additional samples must be  
qualified (J).

A.1.20.2    Aqueous LCS

Circle on each Form VII the LCS percent  
recoveries outside control limits 80-120%.

NOTE: 1. Use digested ICV as LCS for aqueous mercury  
2. Use distilled ICV as LCS for aqueous cyanide

Is any LCS recovery:

Less than 50%?

—    [ ]    ☒

Between 50% and 79%?

—    [ ]    ☒

Between 121% and 150%?

—    [ ]    ☒

Greater than 150%?

—    [ ]    ☒

ACTION:

If the LCS recovery is less than 50%,  
reject (R) and red-line all associated  
sample data (detects & non-detects); for  
a recovery between 50-79%, flag detects  
as "J" all non-detects as "UJ". if the LCS  
recovery is between 121-150%, flag only  
detects as "J". if the recovery is greater  
than 150%, reject (R) and red-line all detects.

A.1.20.3    Solid LCS

If an analyte's MDL is equal to or  
greater than the true value of LCS,  
disregard the "Action" below for that  
analyte even though the LCS is out of  
control limits.

Is the LCS "Found" value greater  
than the Upper Control Limit  
reported on Form VII?

—    ☒    —

ACTION:

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YES    NO    N/A

If yes, flag (J) all the associated  
detects  $\geq$  MDL as estimated (J).

Is the LCS "Found" value lower  
than the Lower Control Limit  
reported on Form VII?

—    [☒]    —

ACTION:

If yes, flag detects as "J" and  
non-detects as "UJ".

A.1.21    ICP-AES/ICP-MS Serial Dilution - Form VIII

NOTE: Serial dilution analysis is required only  
when the initial concentration is equal to or  
greater than 50 x MDL.

A.1.21.1    Was a Serial Dilution analysis  
performed:

For each SDG?

[☒]    —    —

On one of the SDG samples?

[☒]    —    —

For each matrix type?

[☒]    —    —

For each concentration range  
(low or med.)?

[☒]    —    —

Was a Serial Dilution sample  
analyzed with the SDG samples?

[☒]    —    —

ACTION:

If no for any of the above, flag  
as estimated (J) detects  $\geq$  MDL of  
all the SDG samples for which the  
ICP Serial Dilution Analysis was  
not performed.

A.1.21.2    Was a Field Blank or PE sample used  
for the Serial Dilution Analysis?

—    [☒]    —

ACTION:

If yes, flag as estimated (J) detects  
 $\geq$  MDL of all the SDG samples

A.1.21.3    Circle on Form VIII the Percent Differences  
(%D) between sample results and its dilution  
results that are outside the control limits  $\pm 10\%$

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when initial concentrations  $\geq 50 \times$  MDLs.

YES    NO    N/A

Are results outside the control  
limits flagged with an "E" (Lab Qualifier)  
on Form VIII and all Form I's?

☒    ☐    ☐

ACTION:

If no, write in the Contract-Problem/  
Non-Compliance Section of the Data  
Review Narrative.

A.1.21.4    Are any %D values:

> 10%?

☒    ☐    ☐

$\geq 100\%$ ?

☐    ☒    ☐

ACTION:

If the Percent Difference (%D) is  
greater than 10%, flag (J) as estimated  
all associated samples whose raw data  $\geq$  MDL;  
if the %D is  $\geq 100\%$ , reject (R) and red-line  
all associated samples with raw data  $\geq$  MDL.

(NOTE: Replace "E" with "J" or "R" as appropriate.)

A.1.22    Total/Dissolved or Inorganic/Total Analytes

A.1.22.1    Were any analyses performed for  
dissolved as well as total analytes  
on the same sample(s)?

☐    ☒    ☐

Were any analyses performed for  
inorganic as well as total analytes  
on the same sample(s)?

☐    ☒    ☐

ACTION:

If yes, prepare a Form (Appendix A.5)  
to compare the differences between  
dissolved (or inorganic) and total  
analyte concentrations. Compute each  
difference on Appendix A.5 as a percent  
of the total analyte only when both of  
the following conditions are fulfilled:

- (1) The dissolved (or inorganic) concentration  
is greater than total concentration, and
- (2) greater than or equal to  $5 \times$  MDL.

A.1.22.2    Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 20%?

☐    ☐    ☒

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YES      NO      N/A

A.1.22.3    Is any dissolved (or inorganic)  
concentration greater than its  
total concentration by more than 50%?

—      [ ]      /

ACTION:

If the percent difference is greater  
than 20%, flag (J) both dissolved/inorganic  
and total concentrations as estimated. If  
the difference is more than 50%, reject (R)  
and red-line both the values.

A.1.23    Field Blank - Form I

NOTE: Designate "Field Blank" as such on Form I

A.1.23.1    Was a Field/Rinsate Blank collected  
and analyzed with the SDG samples?

[ ]      /      —

If yes, is any Field/Rinsate Blank  
absolute value of an analyte on Form I  
greater than its CRQL (or 2xMDL when MDL > CRQL)?

—      [ ]      /

If yes, circle the Field Blank value  
on Form I that is greater than the  
CRQL, (or 2 x MDL when MDL > CRQL).

Is any Field Blank value greater  
than CRQL also greater than the  
Preparation Blank value?

—      [ ]      /

If yes, is the Field Blank value  
(> CRQL and > the prep. blank value)  
already rejected due to other QC  
criteria?

[ ]      —      /

ACTION:

If the Field Blank value was not rejected,  
reject all associated sample data (except  
the Field Blank results) greater than the  
CRQL but less than the Field Blank value.  
Reject on Form I's the soil sample results  
whose raw values in ug/L in the instrument  
printout are greater than the CRQL but less  
than the Field Blank value in ug/L. Flag as  
"J" detects between the Field Blank value and  
10xField Blank value. If the sample result  $\geq$  MDL  
but  $\leq$  CRQL, replace it with CRQL-U.

If the Field Blank value is less than the

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YES    NO    N/A

Prep.Blank value, do not qualify the sample results due to the Field Blank criteria.

NOTE:

1. Field Blank result previously rejected due to other criteria cannot be used to qualify field samples.
2. Do not use Rinsate Blank associated with soils to qualify water samples and vice versa.

A.1.24    Verification of Instrumental Parameters - Form IX, XA, XB, XI

A.1.24.1    Is verification report present for:

Method Detection Limits (Form IX-Annually)?	<input checked="" type="checkbox"/>	___	___
ICP-AES Interelement Correction Factors (Form XA & XB -Quarterly)?	<input checked="" type="checkbox"/>	___	___
ICP-AES & ICP-MS Linear Ranges (Form XI-Quarterly)?	<input checked="" type="checkbox"/>	___	___

ACTION:

If no, contact CLP PO/TOPO for submittal from the laboratory.

A.1.24.2    Method Detection Limits - Form IX

A.1.24.2.1 Are MDLs present on Form IX for:

All the analytes?	<input checked="" type="checkbox"/>	___	___
All the instruments used?	<input checked="" type="checkbox"/>	___	___
Digested and undigested samples and Calib.Blanks?	<input checked="" type="checkbox"/>	___	___
ICP-AES and ICP-MS when both instruments are used for the same analyte?	<input type="checkbox"/>	___	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, prepare Telephone Record Log and contact CLP PO/TOPO for submittal of the MDLs from the laboratory. Report to CLP PO and write in the Contract Problems/Non-Compliance Section of the Data Review Narrative if the MDL concentration is not less than ½ CRQL.

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A.1.24.2.2 Is MDL greater than the CRQL  
for any analyte?

YES	NO	N/A
___	[ <input checked="" type="checkbox"/> ]	___

If yes, is the analyte concentration  
on Form I greater than 5 x MDL for  
the sample analyzed on the instrument  
whose MDL exceeds CRQL?

[ <input type="checkbox"/> ]	___	<input checked="" type="checkbox"/>
------------------------------	-----	-------------------------------------

ACTION:

If no, flag as estimated (J) all  
values less than five times MDL for  
the analyte whose MDL exceeds the CRQL.

A.1.24.3 Linear Ranges - Form XI

A.1.24.3.1 Was any sample result higher than  
the high linear range for ICP-AES  
or ICP-MS?

___	[ <input checked="" type="checkbox"/> ]	___
-----	---	-----

Was any sample result higher than  
the highest calibration standard  
for mercury or cyanide?

___	[ <input type="checkbox"/> ]	<input checked="" type="checkbox"/>
-----	------------------------------	-------------------------------------

If yes for any of the above, was  
the sample diluted to obtain the  
result reported on Form I?

[ <input type="checkbox"/> ]	___	<input checked="" type="checkbox"/>
------------------------------	-----	-------------------------------------

ACTION:

If no, flag (J) as estimated the  
affected detects ( $\geq$  MDL) reported  
on Form I.

A.1.25 ICP-MS Tune Analysis - Form XIV

A.1.25.1 Was the ICP-MS instrument  
tuned prior to calibration?

[ <input type="checkbox"/> ]	___	<input checked="" type="checkbox"/>
------------------------------	-----	-------------------------------------

ACTION:

If no, reject (R) and red-line all  
sample data for which tuning was not  
performed.

A.1.25.2 Was the tuning solution analyzed  
or scanned at least five times  
consecutively?

[ <input type="checkbox"/> ]	___	<input checked="" type="checkbox"/>
------------------------------	-----	-------------------------------------

Were all the required isotopes  
spanning the analytical range  
present in the tuning solution?

[ <input type="checkbox"/> ]	___	<input checked="" type="checkbox"/>
------------------------------	-----	-------------------------------------

Was the mass resolution within

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YES    NO    N/A

0.1 amu for each isotope in the  
tuning solution?

[ ]

—

✓

Was %RSD less than 5% for each  
isotope of each analyte in the  
tuning solution?

[ ]

—

✓

ACTION:

If no for any of the above, qualify  
all results  $\geq$  MDL associated with that  
Tune as estimated "J", and all non-detects  
associated with that Tune as "UJ".

A.1.26    ICP-MS Internal Standards - Form XV

A.1.26.1    Were the Internal Standards added  
to all the samples and all QC  
samples and calibration standards  
(except the Tuning Solution)?

[ ]

—

✓

Were all the target analyte  
masses bracketed by the masses  
of the five internal standards?

[ ]

—

✓

ACTION:

If none of the Internal Standards was  
added to the samples, reject (R) and  
red-line all the associated sample data  
(detects & non-detects). If internal  
standards were used but did not cover all  
the analyte masses, reject (R) and red-line  
only the analyte results not bracketed by  
the internal standard masses.

A.1.26.2    Was the intensity of an Internal  
Standard in each sample within 60-125%  
of the intensity of the same Internal  
Standard in the calibration blank?

[ ]

—

✓

If no, was the original sample diluted  
two fold, Internal Standard added and the  
sample re-analyzed?

[ ]

—

✓

Was the %RI for the two fold diluted sample  
within the acceptance limits (60-125%)?

[ ]

—

✓

ACTION:

If no for any of the above, flag detects  
as "J" and non-detects "UJ" of all the  
analytes with atomic masses between the

atomic mass of the internal standard lighter

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than the affected internal standard, and the  
atomic mass of the internal standard heavier  
than the affected internal standard.

A.1.27 Percent Solids of Sediments

A.1.27.1 Are percent solids in sediment(s):

< 50%?

\_\_\_\_\_ [✓] \_\_\_\_\_

ACTION:

If yes, qualify as estimated (J) all detects and  
non-detects of a sample that has percent solids  
less than 50% (i.e., moisture content greater than 50%).

NOTE:

Flag(J) only the sample results  
that were not previously flagged  
due to other QC criteria.

Inorganic Data Review Narrative

Case#	_____	Site:	_____	Matrix: Soil	_____
SDG#	_____	Lab:	_____	Water	_____
Sampling Team:	_____	Reviewer:	_____	Other	_____

A.2.1 Data Validation Flags:

The following flags may have been applied in red by the data validator and must  
be considered by the data user.

- J - This flag indicates the result qualified as estimated
- R and Red-Line - A red-line drawn through a sample result indicates unusable value.  
The red-lined data are known to contain significant errors based on  
documented information and must not be used by the data user.
- U - This data validation qualifier is applied to sample results  
≥ MDL when associated blank is contaminated
- Fully Usable Data - The results that do not carry "J" or "red-line" are fully  
usable.

A.2.2 Laboratory Qualifiers:

The CLP laboratory applies a contractual qualifier on all

## LDC# 66693 - Glen Cove-10 Garvies Point Road

SDG: 480739511

Analytical Method		SW6010C										
Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Report	Detect	Lab Qual	Val Qual	Final qual	RL	MDL	Units
4802225111A	4802225111A	ARSENIC	1/13/2015		Yes	N	U		U	2.0	0.40	
4802225111A	4802225111A	LEAD	1/13/2015		Yes	N	U		U	1.0	0.24	
CC-C-019 (0-2)-20150109	480-73951-8	LEAD	1/13/2015	473	Yes	Y		J	J	1.1	0.27	mg/kg
CC-C-019 (0-2)-20150109	480-73951-8	ARSENIC	1/13/2015	993	Yes	Y				2.3	0.45	mg/kg
CC-C-022 (0-2)-20150109	480-73951-7	LEAD	1/13/2015	371	Yes	Y		J	J	1.0	0.25	mg/kg
CC-C-022 (0-2)-20150109	480-73951-7	ARSENIC	1/13/2015	187	Yes	Y				2.1	0.41	mg/kg
CC-C-023 (6-8)-20150109	480-73951-9	LEAD	1/13/2015	215	Yes	Y		J	J	1.1	0.27	mg/kg
CC-C-028 (0-2)-20150109	480-73951-10	ARSENIC	1/13/2015	13	Yes	Y				2.0	0.41	mg/kg
CC-C-029 (8-10)-20150109	480-73951-11	LEAD	1/13/2015	141	Yes	Y		J	J	1.1	0.27	mg/kg
CC-C-030 (8-10)-20150109	480-73951-12	LEAD	1/13/2015	175	Yes	Y		J	J	1.1	0.27	mg/kg
LT-C-003 (0-2)-20150107	480-73951-3	ARSENIC	1/13/2015	2.7	Yes	Y				2.2	0.45	mg/kg
LT-C-024 (2-4)-20150107	480-73951-4	ARSENIC	1/13/2015	6.9	Yes	Y				2.1	0.42	mg/kg
LT-C-024 (2-4)-20150107	480-73951-4	LEAD	1/13/2015	7.2	Yes	Y		J	J	1.0	0.25	mg/kg
LT-C-026 (6-8)-20150107	480-73951-5	ARSENIC	1/13/2015	4.3	Yes	Y				2.3	0.46	mg/kg
LT-C-035 (4-6)-20150107	480-73951-6	ARSENIC	1/13/2015	652	Yes	Y				12.3	2.5	mg/kg
LT-C-056 (2-4)-20150107	480-73951-1	ARSENIC	1/13/2015	13.1	Yes	Y				2.3	0.47	mg/kg
LT-G-019 (2-14)-20150107	480-73951-2	ARSENIC	1/13/2015	3.5	Yes	Y				2.5	0.51	mg/kg

SDG: 480739512

**Analytical Method** SW6010C

<b>Sample ID</b>	<b>Lab Sample ID</b>	<b>Chemical Name</b>	<b>Anal Date</b>	<b>Result</b>	<b>Report</b>	<b>Detect</b>	<b>Lab Qual</b>	<b>Val Qual</b>	<b>Final qual</b>	<b>RL</b>	<b>MDL</b>	<b>Units</b>
4802228861B	4802228861B	ARSENIC	1/16/2015		Yes	N	U		U	0.015	0.0056	
4802230902A	4802230902A	ARSENIC	1/16/2015		Yes	N	U		U	0.015	0.0056	
CC-C-019 (0-2)-20150109	480-73951-8	ARSENIC	1/16/2015	0.36	Yes	Y				0.015	0.0056	mg/l
CC-C-022 (0-2)-20150109	480-73951-7	ARSENIC	1/16/2015	0.0059	Yes	Y	J		J	0.015	0.0056	mg/l
LT-C-035 (4-6)-20150107	480-73951-6	ARSENIC	1/19/2015	0.2	Yes	Y				0.15	0.056	mg/l

SDG: 480742201

**Analytical Method** SW6010C

<b>Sample ID</b>	<b>Lab Sample ID</b>	<b>Chemical Name</b>	<b>Anal Date</b>	<b>Result</b>	<b>Report</b>	<b>Detect</b>	<b>Lab Qual</b>	<b>Val Qual</b>	<b>Final qual</b>	<b>RL</b>	<b>MDL</b>	<b>Units</b>
4802231341A	4802231341A	ARSENIC	1/16/2015		Yes	N	U		U	1.9	0.38	
4802231341A	4802231341A	LEAD	1/16/2015		Yes	N	U		U	0.96	0.23	
LT-G-022 (0-2)-20150114	480-74220-1	ARSENIC	1/16/2015	76.6	Yes	Y				2.3	0.47	mg/kg
LT-G-022 (0-2)-20150114	480-74220-1	LEAD	1/16/2015	285	Yes	Y		J	J	1.2	0.28	mg/kg
LT-GI-001 (4-6)-20150114	480-74220-2	LEAD	1/16/2015	341	Yes	Y		J	J	1.1	0.27	mg/kg